Chapter 3

CUSTODIAL SERVICE METHODS

Section 1— FLOOR CLEANING

3.1.1 Introduction. With the upgrading of present day floor coverings, the old type wood floors have in the majority of instances been replaced with resilient smooth surface flooring materials such as asphalt tile, vinyl asbestos, vinyl, rubber tile, linoleum, linotile and cork. Care of these floors is generally the key to an overall economical custodial program. With the installation of these floor coverings, the development of synthetic and concentrated cleaning materials, and with labor costs taking the greater part of the custodial budget, the proper training and motivation of the custodial worker is the key to lower cost for custodial services. It is essential that the worker be trained in the modern methods and equipped with supplies and modern tools necessary to accomplish his job. There is no one miracle finish or even perfect type finish. There are a number of variables that will affect the floor finish such as: low humidity will cause a finish to powder or to become slippery, yellowing tendencies of some finishes may be objectionable on light floors yet give excellent results on others.

3.1.2 Floor Cleaning. Floors are cleaned to maintain sanitary conditions and to protect them from damage. Methods suggested in this manual result from practical experience and research.

3.1.2.1 Sweeping. Dirt can be removed with a vacuum cleaner, by sweeping with a brush or broom, or by the use of a dry or treated sweeping mop of the proper design. Degree of sweeping efficiency has both a direct and indirect bearing on the cost of cleaning, such as:

(1) Overall appearance of floors.

(2) Standard of dust control throughout the building.

(3) Custodial funds expended for sweeping operations.

(4) Custodial funds expended for floor finishing.

(5) Custodial funds expended for other custodial operations.

(6) Thorough removal of foreign particles from floor surfaces minimizes wear.

3.1.2.2 Sweeping Tools. Sweeping tools used on various kinds of floor coverings are shown in Table 4. The best approach to efficient sweeping is to determine the type of sweeping equipment best suited to each floor area considering the degree of obstruction, type of floor surface, and whether the floor is sealed or not sealed. In offices and other areas containing equipment, a smaller size sweeping tool can cover the area with greater efficiency in maneuvering. Power sweeping large areas can cut floor sweeping time up to 90 per cent.

The average coverage per hour for a walking-type sweeper is about 20,000 square feet with a sweeping swath of 39 inches. A small riding-type with a 40 inch swath will cover about 30,000 square feet per hour. A 36 inch to 48 inch broom or sweeping mop should be used for corridors or open areas to minimize the number of passes. A V-type sweeping mop which can be adjusted in width from 6 to 57 inches serves both purposes. Neither bristle brushes nor sweeping mop are used to pick up heavy dirt or mud. Corn brooms are used for this purpose. Dirt gathered by brush, broom or V-type sweeping mop is picked up in a dustpan and emptied into a dust container. Dirt and dust from straight sweeping mops is shaken directly into the

dust container. Detailed instructions for handling and use of sweeping tools are given in another chapter.

3.1.2.3 Frequency of Sweeping. The sweeping frequency may vary for different floor areas depending upon the nature of work of the building occupants, amount of floor traffic, dust and dirt exposure, standard of cleanliness, local weather conditions, nature of soil, condition of grassed areas around buildings, and adequacy of sidewalks. Table 1 provides a guide for frequency of sweeping under average conditions.

3.1.2.4 Sweeping Standards. A properly swept floor should not have dust streaks, marks, dirt in corners, behind radiators or doors, or under furniture. Furniture and other equipment moved during sweeping should be replaced (see glossary for "movable furniture"). Baseboards, equipment and furniture should not be disfigured by sweeping mop or broom. The room should appear orderly and well attended.

3.1.3.1 Mopping. Mopping removes dirt which sticks to the floor surface and cannot be removed by sweeping or by dry cleaning. Water and detergent loosen and suspend the dirt so that it may be removed. The mop is used to spread the washing solution and rinse water, to rub sticky dirt loose from the floor, and to pick up the washing solution and rinse water. This washing action of both soaps and detergents is performed in three steps.

(1) Wetting the soil and the surface of the object being washed.

(2) Removing the soil from the surface.

(3) Keeping the soil in solution and suspension. Water has a property known as “surface tension," which makes it act as

Table 4–1—Sweeping Tools Used on Different Kinds of Floor

Kind of floor surface	Tool to be used					
	Bristle floor brush	Fiber floor brush	Corn broom	Sweeping mop		
				Treated*	Untreated	Powered equipment
Rough, unpainted, or unsealed open-grained wood floor		XX	X			
Smooth, unpainted, or unsealed wood floor	X	XX				
Smooth, sealed, or painted wood floor—not waxed	X			XX		
Smooth, sealed, and waxed wood floor	X			XX	XX	XX
Linoleum—waxed				XX	XX	XX
Asphalt tile—not waxed	X			XX	XX	XX
Asphalt tile—waxed	X			XX	XX	XX
Vinyl—not waxed	X			XX	XX	XX
Vinyl—waxed	X			XX	XX	XX
Terrazzo					XX	XX
Mosaic tile				XX	XX	XX
Quarry tile				XX	XX	XX
Rubber tile	X			XX	XX	XX
Rubber tile—waxed	X			XX	XX	XX
Rough concrete		XX	X			
Smooth concrete—not treated to eliminate dustiness	X	XX				
Smooth, treated, or painted concrete	X	X		XX	XX	XX
Oxychloride cement	X				XX	XX

Note: XX means that the tool is to be used if equipment is available. X means that the tool is to be used only if tool marked XX is not available. Where two tools are checked with the same symbol, either may be used.
*Use a liquid emulsion mop-treating compound. Do not use an oil emulsion nor an oil base.

though it is covered with a thin elastic film. This "surface tension" prevents water from getting in, under and around the small particles of dirt on the surface to be cleaned. By adding soap or detergent to water, this tension is decreased so that it will break upon contact with the particles. This permits the solution to get in and around the dirt and loosen it so that it may be picked up with a damp mop. Extensive damage can be done to floors by using excessive water and strong cleaning agents. Damage can be minimized by strict adherence to the following rules:

(a) Use water sparingly, only enough to do the job.

(b) Never use a mopping solution stronger than necessary to remove dirt. Many jobs can be done with clear water.

(c) Use only clear water on conductive floors.

(d) Allow solution to loosen dirt, then remove. Flooding of floor must be avoided at all times.

(e) Mop, rinse, and dry one small area of floor at a time. This reduces the time that the solution remains on the floor.

(f) Change water frequently. Dirty water will not wash clean. This applies both to wash and rinse water.

(g) Do not splash baseboards, furniture, and other equipment with mop water. If legs of furniture become dark from mop water or wax, clean them with a soft cloth and a solution of warm water and neutral detergent. Rinse with clear water and dry with a cloth.

(h) Do not allow water to seep under furniture, baseboards, or equipment. Apply masking tape around bottom of cabinets to prevent solution from seeping underneath and eventually causing rust stains to the floor surface.

(i) Difficult places, such as corners or behind radiators, should be mopped by hand. This can be accomplished by grasping a portion of the mop in your hand and using it as a scrubbing cloth.

(j) All mopped floors shall present a clean appearance free from streaks, smears, or dirt residue.

(k) Light spot cleaning with a damp mop and clean water may be required periodically in limited areas.

3.1.3.2 Frequency of Damp Mopping. Frequency of damp mopping will depend upon weather conditions, amount of traffic, and type of floor surface. Rough or porous floors need mopping more often than smooth, sealed floors. Table 1 provides guidance for frequency of damp mopping and other cleaning operations under average conditions.

3.1.3.3 Mopping Methods and Solutions. Table 5 describes the solution and method used for mopping floors and floor coverings. Details are given in paragraphs 6.2.13 through 6.2.19.5. Instructions for damp mopping conductive floors are given in paragraph 3.1.7.10 and 6.2.38.

3.1.4 Scrubbing. Floors should be scrubbed only when they cannot be cleaned satisfactorily by mopping. Scrubbing is performed with a disk type or automatic floor machine using a bassine fiber brush or synthetic scrubbing pad. The general rules for mopping apply. Scouring powder should be avoided. However, if it must be used, sprinkle powder lightly on floor before scrubbing. When using solutions stronger than all-purpose synthetic detergent solution, wear rubber gloves to protect the hands. Water or scrubbing solution should not remain on floor longer than absolutely necessary. Wood floors should be scrubbed with the grain.

IMPORTANT: Floor scrubbing should be kept to an absolute minimum. If floors are properly maintained, they seldom need scrubbing.

3.1.5 Dry Cleaning. Floors should be dry-cleaned where possible rather than mopped. One method of dry cleaning is performed by use of a disk-type machine equipped with a number one steel wool pad and vacuum attachment. If the floor has been sealed and is in good condition use steel wool to clean it

3.1.5.1 Disk-Type Machine. A small disk-type machine with a steel wool pad or a synthetic cleaning pad may be used to dry-clean floors in small congested areas.

Table 5—Mopping Solutions

Kind of floor surface	Mopping solution	Wet mop scrubbing	Damp mop	Rinse	Remarks
Unpainted, unsealed wood.	⅛ to 1 cup of synthetic detergent in 1 gal of water.	Only if very dirty, or dirt has set.	Preferred. Use as little water as possible.	Yes. Change water often.	Avoid alkalies; GI soaps or strong solutions of trisodium phosphate emulsify oils and gums in wood. Water softens fibers causing rapid wear. Remove water immediately.
Sealed wood or painted wood, not waxed.	⅛ to ¼ cup of synthetic detergent in 1 gal of water.	Only if very dirty or dirt has set.	Preferred. Use as little water as possible.	Yes. Change water often.	While paint and seals are not attacked by water, they are by alkali GI soap, and all strong cleaning solutions. Rinse carefully and remove water immediately.
Waxed wood, linoleum, asphalt tile, vinyl.	Clear water and small amount of synthetic detergent only.	Only to remove wax.	Yes. Use as little water as possible.		Do not use soap or any other cleaning agent except to remove dirt. Mop only if floor cannot be dry cleaned.
Unwaxed linoleum, asphalt tile, rubber, mastipave, vinyl.	Clear water. If very dirty, use all-purpose synthetic detergent solution.	Never let water stand on these floors. Water in seams loosens floor coverings.	Yes. Use as little water as possible.		These floor coverings are impervious to most dirt, and clear water will remove everything except grease and some stains. alkali GI soap emulsifies linseed oil in linoleum. Strong trisodium phosphate is equally destructive.
Unwaxed oxychloride cement	Clear water. If very dirty, use all-purpose synthetic detergent solution.	Only if very dirty. Change solution often.	Preferred. Change water often.	Yes. Change water often.	Strong acids or alkalies attack floors and cause deterioration. Mild acids and alkalies sear them.
Terrazzo, mosaic tile, quarry tile, flagstone, slate, marble, unpainted concrete.	All-purpose synthetic detergent solution.	Only if very dirty. Change solution often.	Preferred. Change water often.	Yes. Change water often.	Alkali GI soaps and strong solutions of trisodium phosphate attack marble, slate, terrazzo, and the like, and cause pitting and rapid wear.
Painted concrete.	Same as for painted wood.	Only if very dirty.	Preferred.	Yes.	See remarks on painted wood floors.

Instructions for operating this machine are found in paragraphs 6.2.20.1 and 6.2.24. Figure 3 shows machine in operation.

3.1.5.2 Frequency of Dry-Cleaning. Properly sealed and waxed floors and waxed resilient floor covering may be dry-cleaned between rewaxing in lieu of periodic damp mopping and buffing. Steel wool pads will not be used on rigid floors such as terrazzo, marble, concrete, oxychioride cement, etc.

3.1.6 Waxing. Table 6 indicates waxes and finishes recommended for different types of floors.

3.1.6.1 Water Emulsion Wax. This wax may be applied with a lambswool applicator or an ordinary mop. If a lambswool applicator is used, pour the wax into a shallow pan. Wax should be ½ inch deep in pan. (An empty five-gallon wax drum cut to a height of three inches makes a good pan for

Figure 3. 20" Floor Polisher.

this purpose.) Dip applicator in wax and wipe surplus off on side of pan. Apply a thin, even coat to an area about 6 X 6 feet, first one way, and then cross-wise. Once wax starts to dry, do not touch it with applicator. If mop is used, wash mop to make certain no cleaning solution remains. If possible a special mop should be kept for waxing operations only. Soap or detergent destroys the waterproof qualities of wax. After washing, wet the mop in clear water and wring it dry as possible. Pour just enough wax to do the job in a clean mop pail. Wet mop in wax and wring out excess. Apply a thin, even coat to floor. Do not rub with mop after applying. Complete instructions are given in paragraph 6.2.23. For longer durability and high gloss, apply one coat of wax, buff, then add a second coat of wax and buff again. After the waxing operation is completed, the left over wax should be disposed of and not be returned to the container.

(1) *Buffing.* Wax should be thoroughly dry before buffing. Drying time depends on amount of air circulation and the temperature. If the dry cleaning method is not used, use a disk-type buffing machine (paragraph 6.2.20) with tampico brush or with a fine synthetic polishing pad. A lambswool pad can be placed under the brush of the disk-type machine to remove brush marks.

(2) *Important Points on Use and Maintenance of Wax Floors.*

(a) To prevent buildup of successive layers, wax should not be applied closer than 6 inches adjacent to walls, partitions, or fixtures, except for the first coat. A buffing machine will spread sufficient wax to these little-used traffic areas.

(b) Waxed floors should be vacuumed or swept with a sweeping mop or brush broom as often as necessary to keep the floors reasonably free from dust or abrasives.

(c) Dry clean periodically with disk-type floor machine with fine steel wool pad

Table 6—Wax and Floor Finish Data

Kind of floor or floor covering	*Kind of wax to use*		
	Spirit Wax	*Water Emulsion Wax*	*Resin Emulsion Finish*
Wood (not sealed or varnished)	Yes	Never	Never
Wood (well sealed or varnished)	Yes	Yes	Never
Linoleum	No	Yes	Yes
Asphalt tile	No	Yes	Yes
Mastipave	Yes	Yes	Yes
Rubber	No	Yes	Yes
Cork	Yes	Yes	Yes
Vinyl	Yes	Yes	Yes
Oxychloride (not sealed)	No	Yes	Yes
Oxychloride (sealed)	No	Yes	Yes
Vinyl Asbestos	Yes	Yes	Yes
Conductive floors	Never	Never	Never
Terrazzo	No	Never	Water-Emulsion Resin (See Table 2)

to remove heavy soil and traffic marks. In lieu of the dry cleaning machine, damp mop with clear water, and buff.

(d) Wax heavy traffic areas as often as necessary to protect floors.

(e) When waxed floors cannot be maintained satisfactorily all wax should be removed by mopping with wax remover solution followed by plain water mop-rinse, and rewaxing.

(f) Built-up wax may require scrubbing with steel wool. The wax removers are formulated for use primarily on asphalt, rubber, linoleum, vinyl, vinyl asbestos and mastipave floor coverings and should not damage these floors if properly used. In the absence of prepared wax remover, ammonia in solution with synthetic detergent and water may be used. However, take care to use only enough ammonia to remove the wax effectively.

(3) *Waxing Standards.* A properly waxed floor should have a thin, even coating. Floor should be clean and bright in corners and under furniture as well as in other areas. Wax should be huffed to a uniform sheen, leaving no heavy brush marks.

(4) *Black Marks or Rubber Burns may be Removed by Spot Cleaning.* An effective way to accomplish this is to affix a piece of synthetic scrubbing pad between the mop head and handle clamp so that approximately six to eight inches are on either side. Dip mop in a solution of water emulsion wax and water and spot scrub marks and buff, figs. 4 and 5.

(5) *Spray Cleaning.* Spray maintenance is not a complete floor treatment. It is an interim process to make the regular finish last longer, look better and reduce labor costs. It is adapted for all types of floors, but more so for the resilient types than others. It is needed most where traffic is heaviest. Consequently, the refinishing of the entire floor each time a new application is made is unnecessary, and the logical system is to reapply a finishing coat only when it is needed. In most cases, refinishing the floor twice a year, should suffice, provided the proper interim methods are observed. This not only means

Figure 4. Damp Mop with Abrasive Pad.

Figure 5. Attaching Abrasive Pad to Heel of Damp Mop.

a considerable saving in time and material, but eliminates the great inconvenience of the more frequent messy job and the taking of the floor out of use. While the spray method may be used with cleaning solution alone, serving as a limited scrubbing operation for not too dirty floors, using a minimum of water; the chief and more popular function is the simultaneous cleaning and finishing operation. The spraying devices vary, some are attached to the machine handle and supply the liquid automatically, some are attached to the machine proper while another is held in the hand. However, the principle function is to spray a misty coating on the floor just

Figure 6. Spray Cleaning.

ahead of the floor machine, under which an absorbent pad, either steel wool, synthetic, or non-woven nylon pads, draws the dirty coating up into its body while it leaves enough finish material on the floor to respond to the buffing as the machine proceeds, fig. 6. Completely integrated systems, which make the sprayer and floor machine a single unit, enable the operator to maintain heavily trafficked areas in less time than the usual conventional method and involves only half as many steps. Because less water and harsh cleaners are used, the floors last longer. By the spray application the refinished spaces blend in with the rest of the floor. The advantage of the spray method over the conventional method is the elimination of mops, buckets, vacuum cleaner, and machine scrubbing. A dirty floor may be safely cleaned and polished by the spray method. The floor is safe to walk upon soon after the floor machine has passed on. Both the self-polishing water emulsion waxes and the polymer resin finishes are usually adapted to the spray method. The nature of the spray itself is important, since a coarse spray may result in small puddles of the solution on the floor. When a cleaner alone is used, this would probably be no disadvantage, but when the solution contains wax or polymer emulsion, the puddles are more difficult to get spread out on the floor before they dry. When a poly-resin finished floor becomes dull or marred, often clear water sprayed in a fine mist ahead of the floor machine will restore the gloss. Spray only where the traffic wears the base finish or where scuffs and marks appear. Hospitals can add disinfectants to the regular spray cleaning solution to reduce bacteria count. As much as one cup of disinfectant may be added to a gallon of spray solution.

(6) *Hand Spray Bottle Technique.* The use of the hand spray bottle, which can be easily carried in the custodian's pocket, is an efficient method for applying a 50 per cent mild liquid detergent solution on a soiled area. After the spray is applied, wipe it off immediately with a clean soft cloth or a nylon web pad. This method prevents dripping and running. Moist sponge or water is not required to clean up after application of the spray solution. This technique is a direct follow-up of spray cleaning method used on resilient tile flooring.

3.1.7 Types of Floors and Treatment:

3.1.7.1 Wood Floors:

(1) *Effect of Strong Soap and Water.* The most common floor woods are maple, oak, pine, and fir. Maple and oak are hardwoods and are more resistant to water and wear. Because there is no apparent difference between hard and soft layers of maple flooring, it is called a close grained wood. Oak, pine, and fir grain consist of alternate layers of quite hard and soft fibers. These are called open-grained woods. Open-grained woods are likely to splinter if the soft, pulpy part of the grain is eaten away by the lye in strong soap. This leaves the hard grain without support, which causes splinters and

Table 7—Waxed Floor Maintenance Guide

Problem	*Cause*	*Remedy*
Inadequate Gloss	Floor finish too thin	Apply two thin coats evenly. Wait 72 hours if third coat is needed.
	Floor not properly cleaned and/or rinsed	Use wax stripper, rinse thoroughly. Two applications may be required for heavily soiled floors.
	Porous Floors	Thoroughly wax strip, apply coating to fill pores, and apply wax or polymeric finish; avoid frequent stripping.
Tacky or Sticky Finish	Too much Polish	Allow each thinly applied coat to dry before subsequent coats.
	Polish applied over improperly rinsed floor	Rinse with clean water and wring out mop in separate bucket of water. Change rinse water frequently.
	Use of Improper Polish	Never use solvent waxes on resilient floors. Read directions as to which floor polish may be used.
Excessive Black Marking	Inadequate amount of floor polish	Build-up enough coats for a protective coating. Buff often.
	Poor Quality Finish	Use better quality materials.
Swelling of Rubber Tile	Use of solvent type cleaners or strong soaps	Clean swollen floor with neutral detergent; burnish with #00 steel wool pad and let dry for several days. Apply a base coating to seal pores and then apply a polymeric finish. Do not use solvent waxes or strong soaps on rubber tile.
Sticking of Chairs and other objects	Too long a drying time, especially under humid conditions	Use finishes with a short drying time.
	Polish too heavy	Strip the floor and start again with thin coats, allowing drying time between coats.
	Softening of the floor	Clean and strip the floor. Let floor harden for several days, then apply floor finish.
Pebbling of Cork Tile	Excessive moisture and/or heat	Avoid use of cork flooring where there is excessive moisture or heat. Do not use alkaline cleaners or solvents on cork, use neutral detergents. Do not use oily dust mops or sweeping compounds; use only wax-base dust mop treatment. If condition is severe, contact cork manufacturer.
Warping or Buckling of Vinyl Asphalt or other Resilient Tiles	Water detergent seepage between tiles, which damages adhesive and loosens tiles	Use wet vacuum to pick-up cleaning solutions and rinse water, or clean and rinse in small areas, removing all water before moving on to next area. Once tiles are warped they should be replaced.
Loosening of Ceramic Tiles	Alkaline detergents attack grout between tiles	Use neutral detergents. Replace grouting and damaged tiles.
	Deposit of soap film which attacks grouting	Do not use soap products to clean ceramic tile. Use neutral detergents.
Cracking, Spalling or Staining of Terrazzo Floors	Alkalies seep into pores and attack cement. Acids dissolve marble	Use synthetics, never alkalies to clean terrazzo. Clean-up acids immediately (even fruit juice or soft drinks) with neutral detergent or clear water.
	Rust stains caused by steel wool used for cleaning and buffing marble	Do not use steel wool on terrazzo, clean with cotton or rayon mop. Scrub wih fine nylon pad. Seal with terrazzo sealer.

Table 7—Waxed Floor Maintenance Guide—Continued

Problem	*Cause*	*Remedy*
Discoloration of Vinyl Floors from Rubber Runners or Desk Feet	Vinyl reacts with anti-oxidants in the rubber	Abrade with coarse nylon pad or steel wool. Clean thoroughly, apply one or two coats of polymeric finish, to afford resistance to rubber staining.
Powdering	Polymeric finishes used over wax	Strip floor, apply base coat, then one or two coats of polymeric finish.
	Polish too hard and brittle	Select another brand that is durable and not brittle.
	Use of too abrasive pad or too coarse steel wool	Use fine grade nylon pad for buffing, or a polishing brush if wax coating has shown evidence of abrading.
Whitening	Use of hot cleaners, solvents, or harsh alkalies	Use neutral cleaners in warm water. Avoid alkalies or solvents on resilient flooring.
	Use of dust mops treated with oil-base agents	Strip the floor, burnish with #00 steel wool or fine nylon pads. Apply floor finish and use only wax-base mop treatment.
Washed-out Appearance	Too frequent cleaning	Review cleaning schedules.
	Harsh cleaners	Use neutral detergents.
	Abrasive materials	Use finest grade of cleaning pads. Powders are not recommended on resilient floors.
Color Bleeding	Solvent cleaners or polishers	Never use solvent products on resilient floors. Use neutral cleaners and water-emulsion finishes.
	Harsh alkaline cleaners or abrasive materials	Bleeding is the transfer of color from the flooring to the cleaning solution which represents an attack on the flooring. Do not use.
Color Fading	Direct sunlight	Use curtains, screens, louvers, or tinted glass.
	Strong cleaners	Use neutral detergents.
Streaked Appearance	Too little polish during application	Follow manufacturer's instructions.
	Use of dirty mops	Wash mopheads after waxing. Discard old, worn, or stained mops.
	Poor rinsing	Immediately pick-up water with a wet vacuum, or use a double rinse mopping outfit and change rinse water often.
	Poor quality floor finish	Use a better quality brand.
	Polish too thick	Apply each coat evenly and thinly. It is easier to add thin coats than to get rid of too thick a one.
Yellowed Film	Excessively heavy coats of polish	Apply in thin, uniform coats.
	Too frequent application of polish, and/or infrequent stripping	Wax less often, or strip more often. Schedules should be followed.
	Use of a floor finish having a yellow cast	Select a clear, colorless polymeric finish.
	Recoating entire floor every time floor is cleaned	Do not wax the non-trafficked areas as often.

rough flooring. While the lye in soap acts on wood, water causes wood to swell. When water is first applied to a wood fiber, the individual boards bulge upward in the center. This happens because the top of the board has swelled. Repeated mopping or scrubbing causes the wood to become saturated. When damp wood is drying, the top surface dries first, contracting and pulling the edges of the board upward, which causes them to wear rapidly and to break easily. Warping opens the grooves between boards, which allows collection of water and dirt. Dirt holds water, which causes rotting of boards and rusting of nails. Continued expension and contraction cause the rusted nails to break, resulting in loose boards. Water seeping through the spaces between boards soaks the subfloor and joints, causing further damage.

(2) *Recommended Treatment for Wood Floors.* Wood floors, when new and in good condition, should be sealed with a penetrating seal (Federal Specification TT-S-176d), and waxed with spirit type liquid or paste wax (paragraph 3.1.6). When floors are not badly splintered, the dry-cleaning method should be used. Floors should be swept with a hair brush or sweeping mop. If mopping or scrubbing is necessary, use a mop dampened in all-purpose synthetic detergent solution. (table 5.) Leave the water on the floor only long enough to clean it.

3.1.7.2 Linoleum. Linoleum generally consists of ground cork, wood flour, and oxidized linseed oil. These are thoroughly mixed and pressed into a sheet against a backing of burlap or felt. The linseed oil binds the particles into a waterproof substance. The felt paper acts as a cushion and protects the linoleum from irregularities in the floor.

(1) *Effect of Water and Strong Detergents that are Highly Alkaline on Linoleum.* Application of too much water or strong detergent solution will destroy linoleum. Water seeps between the seams of linoleum strips or under the edges, taking dirt and soap with it. This loosens the binding cement and allows linoleum to curl. Traffic over loose and curled areas will cause cracks in linoleum. Trisodium phosphate emulsifies the linseed oil in the linoleum and causes a grainy and lifeless appearance. Cork particles break loose be cause the linseed oil binder has been removed.

(2) *Recommended Treatment of Linoleum.* At the factory, linoleum is usually given a thin coating of lacquer, followed by a light waxing. This seals the surface and prevents dirt from being embedded. The wax also provides surface protection. As lacquer and wax wear off quickly, constant rewaxing is necessary to keep the surface sealed. If the floor is not waxed by the dry-cleaning method water emulsion wax should be used. For application of water emulsion wax, see paragraph 6.2.23. When linoleum is mopped, use clear water unless the surface is very dirty or wax is to be removed. If wax is to be removed, use a lukewarm solution of wax remover. Never use a soap or cleaning agent containing lye. Do not allow water to seep under the edges or between seams.

3.1.7.3 Asphalt Tile. Asphalt tile consists of asphaltum, asbestos fibers, and the remainder of lime rock, wood flour, and colored pigments. Asphaltum binds the materials together. Asphalt tile is usually cemeted directly to concrete floor or to a felt and sheet hardboard underlayment over wood subflooring.

(1) *Effect of Strong Soap, Solvents, and Water on Asphalt Tile.* Asphalt tile reacts very much in the same manner as linoleum to strong soaps, water and solvents. Soap containing lye forms an emulsion with asphaltum, causing the colors to bleed or run. Solvents and oils dilute asphaltum and soften tiles. For this reason, sweeping compounds of an oily nature should not be used on asphalt tile. Water seepage between seams or under edges of tiles loosens the cement and causes the edges to break or crumble under traffic.

(2) *Recommended Treatment of Asphalt Tile.* Clean floor by mopping lightly with a damp mop and all-purpose synthetic detergent solution. Water emulsion wax must be used in all cases as a base coating. It is buffed with a disk-type machine. Daily

maintenance consists of sweeping with a dry or a treated sweeping mop. At regular intervals, between waxings, tile should be dry-cleaned by using number "0" steel wool or equal synthetic fiber disc and wax applicator. Sticky dirt in this operation is removed by damp mopping with warm water containing a small amount of water emulsion wax. This removes soilage and leaves a light, protective, wax coating.

3.1.7.4 Rubber Tile. Rubber tile is made of natural or synthetic rubber, pigments for color, and aggregates to give body. Water and dirt do not penetrate it Rubber tile returns to shape after being under stress. Strong soaps, oils, or solvents damage it. Water seepage between or under edges will loosen tiles or strips. Unless it is well waxed, rubber tile tends to form a powdery surface.

(1) *Recommended Treatment for Rubber Tile.* Maintain rubber tile floors in the same manner as asphalt tile floors. Rubber heel marks can be removed by rubbing with number "0" steel wool and/or washing with all purpose synthetic detergent solution and/or spray cleaning.

3.1.7.5 Terrazzo. Because of its durability, architectural attractiveness and ease of maintenance, it is used today in unlimited designs and colors for floors, stairs, sidewalks, pools and other applications. While no modern flooring material requires less attention, even terrazzo should have proper care. Such care makes the difference betwen a beautiful floor or just another wearing surface.

(1) *Composition.* Marble and cement, in a two-to-one ratio, constitute the basic ingredients of terrazzo. During installation, more marble is sprinkled on top of the mixture so that marble comprises at least 80 per cent of the finished surface. Since marble is practically non-porous, it absorbs few, if any, staining substances and does not require protective surface coating. However, the matrix or portland cement binder is porous and therefore susceptible to stain. A virtually stainproof floor requires the use of newer, non-porous synthetic cements.

(2) *Maintenance.* Waxes will temporarily protect the porous binder, but such coatings wear off readily and tend to make the surface slippery. Also, a waxed surface holds dirt and requires frequent stripping, adding to cleaning chores.

For best results, protect the flooring internally rather than superficially. Penetrating sealers, which are absorbed by the cement, seal the pores and this greatly reduces the absorbent quality of the binder.

(a) Some cleaning materials can damage terrazzo quarry and ceramic tile floors. Use neutral liquid cleaners. They should have a PH range of 7 thru 10 and be free of any alkali, acid or other chemical that may ruin the floor. The National Terrazzo and Mosaic Association cautions that soaps and scrubbing powders containing water solubles, inorganic salts or crystallizing salts should never be used to clean terrazzo.

(b) The volume of traffic normally determines the frequency of cleaning. Apply cleaners as instructed by the manufacturer’s directions. Wet mop the solutions onto the floor and allow the prescribed period for grime-dissolving action to take place. Then squeegee, wet vacuum, or mop up the dirty solution from the floor.

(c) Be sure to keep the floors wet at all times during the cleaning operation. This prevents the dissolved soil from drying on the floor and acting as an abrasive. Also, when rinse-mopping a cleaning solution, keep the rinse water, mops and pails clean to assure complete removal and to avoid any mop lines. The normal daily wet mopping does not remove all dirt. Thus periodic cleaning with an electric scrubbing machine and a solution of neutral cleaner becomes an important part of the cleaning program.

(d) If you use a mop dressing in daily sweeping, be sure it is non-oily. Besides being a fire hazard, oily sweeping compounds generally attract and hold small particles of sand. These are difficult to sweep and abrade the surface. Oils, in any form, can penetrate the surface and will permanently discolor terrazzo floors.

(e) No flooring material, not even terrazzo under constant use, remains free from stains. Fruit, chewing gum, carbonated beverages, tobacco and a myriad of other items constantly attack heavily used floors. Since stains become more difficult to remove when dry try to remove them as quickly as possible. If possible don't treat stains until they are identified. Only as a last resort should removers be used on unknown stains. Stain removers fall into one of three general classifications; solvent, absorbent or bleach. Solvents dissolve greases, oils, colloids and similar materials. Absorbents such as chalk, talcum powder, blotting paper or cotton absorb most wet-staining substances. Common household chemicals such as chlorox, ammonia, hydrogen, peroxide, acetic acid and lemon juice can actually discolor, or stain, the floor.

The following list of remedies covers most stains:

1. Water will remove most water-base stains.

2. Alcohol will remove most alcohol stains.

3. An alkali will neutralize most acid stains.

4. An acid will neutralize most alkali stains.

5. Use soap for most of the grease stains.

6. Use a cold or cool remover on stains that contain albumen (milk or blood). Heat cooks the albumen and sets the stain on the floor's surface.

7. When using chemicals to remove stains, follow directions carefully. *For example,* if a procedure specifies treatment with a solvent prior to cleaning, don't reverse the procedure. If reversed, the alkali in the soap would set the stain and make removal virtually impossible. Should you encounter heavy or intense staining, obtain professional service from a reliable terrazzo contractor to avoid damaging the surface.

(f) Finally, when purchasing janitorial supplies, don't consider only how far or how many square feet the product will cover, but more important, evaluate how long and how well it will serve you. The more expensive product may be the most economical in the long run.

3.1.7.6 Marble. Marble floors are subject to staining by oils, iodine, mercurochrome, blood, and rust. Strong soaps and cleaners open pores and tend to make floors more water absorbent. Wax makes them slippery.

(1) *Recommended treatment of marble floors.* Maintain in the same manner as terrazzo floors. Stain removal data may be found in Table 3.

3.1.7.7 Concrete Floors:

(1) *Cleaning.* A new concrete floor should be allowed to age at least 21 days before applying a sealing and hardening compound. The floor should be thoroughly cleaned by sweeping or vacuuming and using a floor scrubbing machine with a wire bursh. After scrubbing, the solution is removed with a mop or with a scrubbing machine equipped with a sqeegee and vacuum. The floor should then be thoroughly rinsed with clear water. Remove rinse water with a mop or floor scrubbing machine.

(2) *Hardening.* Apply a concrete hardener and etcher according to manufacturers instructions. This is normally applied with a sprinkling can to get even distribution. Keep the surface wet for about 30 minutes and during this time scrub with a floor machine equipped with a scrub brush. Flush with plenty of clear water and pick up residue with vacuum cleaner equipped with a squeegee or pick up with a mop. Allow floor to dry thoroughly, preferably 24 hours.

(3) *Sealing.* Floor sealing should be accomplished strictly in accordance with manufacturer's instructions. The method may vary depending upon whether the floor is subject to spillage of materials containing solvents.

(4) *Waxing.* After seal is thoroughly dry, apply a thin coat of water-emulsion floor wax. The wax should be applied with a lambswool applicator or suitable mop. Do not apply the first coat nearer than six inches to the wall. Apply a second thin coat to the

entire floor area. When wax is dry, buff with a polishing brush after each application.

3.1.7.8 Vinyl:

(1) *General.* Vinyl flooring is a resilient, plastic material and has a high tensile strength. It is impervious to tracked-in dirt, is not affected by mild acids or alkalies, and is extremely resistant to grease and oils. It has an exceptionally tough wearing surface. It resists traffic marks and scratches, and even pointed heels fail to penetrate the sur-face. It is cemented to the floor in the same manner as asphalt tile or linoleum. In the treatment of stains on vinyl flooring it is essential to identify the type of vinyl before the treatment of stain removal. If the tile is, in fact, vinyl asbestos, it would be harmful to use harsh alkaline cleaners or scouring pow-ders, as these cause the tile to lose its plate finish and become porous, allowing stains to penetrate. Pure vinyl will not readily lose its plate finish, so the stains are not likely to penetrate to the same extent. Persistent staining indicates that the surface has become porous and is retaining dirt, or that there has been spillage of some bleaching or corrosive agent onto an unprotected surface. If the stain penetrates the entire thickness of the tile it may be impossible to remove. Sanding or abrasives damage the surface, making the floors more porous and retentive of dirt and dampness, and while sanding with a disc sander would not be practicable because only the high spots would be removed from so flexible a floor covering.

(2) *Recommended Treatment of stain removal* on *Vinyl Flooring.* A possible treat-ment for bad staining would be to clean thor-oughly with a deep tone powder cleaner, the entire area being treated and several applica-tions being made to the stained portion if necessary. For additional information on re-moval of stains on vinyl flooring see Stain Removal Guide Table 3.

(3) *Recommended Treatment of Vinyl Flooring.* After thorough rinsing and drying, apply one or two coats of semi-permanent seal and top dressing of semi-buffable emulsion polish which should be well buffed. A damp-mopping and daily sweeping routine should keep the floor in good condition. Floors may be mopped if necessary. Allow detergent and water on floors only long enough to clean. Seepage between tiles or under edges causes the cement to lose its holding power. This type of floor covering requires waxing to protect the surface from grit. Occasional damp mopping and buffing is required, with most of the cleaning done by dry sweeping mop.

3.1.7.9. Oxychloride Cement:

(1) *General.* This cement contains chemical compound of magnesium and magnesium oxide to which are added various aggregates such as asbestos, silex, sawdust, marble flour, marble chips, or sand, depending on the type of surface desired. It is resistant to grease and oils. Strong acids will dissolve it, while weak acids will scar it.

(2) *Recommended Treatment of Oxy-chloride-Cement Floors. Oxychloride cement* floors should be treated with a penetrating seal. Floors are then given a light coating of water emulsion wax and buffed. The dry-cleaning method of waxing and polishing may be used. Sweep with a dry sweeping mop or hair brush. Floors may be mopped or scrubbed with warm, all-purpose synthetic detergent solution. Under no circumstances should caustics, lye, GI soaps, or trisodium phosphate be used in cleaning as they deteriorate surfaces and cause colors to fade. Oxychloride cement should not be subjected to continuous scrubbing, even with clear water. Stain removal data is found in table 3.

3.1.7.10 Treatment of Conductive Floors and Floor Covering. Conductive floors are usually found in hospital operating rooms where explosive anesthetic gases are admin-istered. The flooring, aside from serving as a finishing material, also grounds static elec-tricity. In this way, it prevents electrical sparks and the explosion of gases. Use of water on these floors lowers or destroys the ability to ground electricity. Use of soap or detergent has the same effect. If mopping is required, a slightly damp mop using clean water only should be used. Water should not

be allowed to stand on floors. A dry brush, broom, or untreated sweeping mop should be used for sweeping. For sweeping instructions, follow applicable portions of paragraphs 6.2.3 through 6.2.12. Instructions for damp mopping of conductive floors are found in paragraph 6.2.38.

3.1.7.11 Miscellaneous Floor Coverings: manner as linoleum.

(2) *Mastipave.* Treat in the same manner as asphalt tile.

(3) *Ceramic or Quarry Tile.* Treat in the same manner as terrazzo.

3.1.8 Rug Cleaning:

(1) Rugs and carpets are designed to withstand an average amount of punishment, however the average is determined to a large extent to the day-to-day care it receives. Routine use of carpet sweeper or vacuum sweeper and immediate attention to spots and stains is required to adequately maintain the rugs and carpets. The amount and frequency of cleaning is determined by the color, texture, design, amount and type of traffic it receives. Vacuum sweepers are designed with a straight suction, and strong suction with revolving agitator brush. The straight suction removes the surface dirt, and the revolving agitator brush with strong suction is very effective for the removal of imbedded dirt. The brush type sweeper, with revolving brushes, takes up only surface dirt, and does not get at imbedded soil, and is most helpful in brushing up matted pile.

Figure 7. Industrial Type Vacuum Cleaner.

(2) Routine cleaning of rugs and carpets should be accomplished as required with a vacuum cleaner.

(3) The other two methods used in rug cleaning are the dry and wet method, fig. 7.

(a) *The dry method is accomplished by the use of powder-type cleaners (solvent saturated or detergent saturated sawdust).* The rug or carpet is first thoroughly cleaned with the vacuum cleaner. Then sprinkle the dry powder liberally over the area to be cleaned and brush it into the rug or carpet, then vacuum thoroughly. Although this method is not as effective as the wet method, it removes greasy dirt better. The additional advantage is the fact that no drying period is necessary. The wet method is best suited for carpets and rugs of man-made fibers, and this procedure requires certain precautions. Avoid the use of soap, ammonia, washing soda or strong household cleaners. It is essential for best results, that spots and stains be removed before they have a chance to dry or "set." There are several Carpet Stain Remover sets on the market that will remove almost every common stain such as ink, coffee, oil, grease, shoe polish, colas, wine, liquor, grass, etc. These kits are a helpful tool in carpet maintenance. Before attempting removal, it is essential the spot or stain has been correctly identified. If the spot or stain cannot be identified the following procedure may be followed:

1. Remove excess material with a blunt instrument; remove liquids with clean white absorbent material.

2. Apply a detergent-vinegar-water solution made with one teaspoon of neutral detergent to one teaspoon of acetic acid mixed with one quart of warm water. Blot with clean, white cloth gently from soiled edge to center.

3. Dry the rug or carpet and brush pile gently to restore original texture. With any type of cleaning or stain removal

avoid getting rug or carpet too wet. Dry as quickly as possible. Direct air blast from a fan or vacuum attachment is helpful. Spots and stains of unknown origin that do not respond to treatment should be referred to a professional rug cleaner.

(b) *Wet cleaning method.* Cleaning or on-location shampooing of rug or carpets.

1. Cleaning or on-location shampooing of rugs or carpets to remove heavily imbedded dirt is a specialized process and requires thoroughly trained workmen. If such personnel are not available, excellent results can be obtained in a plant equipped to do such cleaning. On-location shampooing will not remove all dirt and soil. The average rug or carpet will require cleaning or shampooing approximately once each year for best appearance. After four to five years of on-location shampoos, a wall-to-wall carpet or rug should be taken up, thoroughly beaten to remove imbedded dirt, reinstalled and shampooed as indicated below; or cleaned in the plant of and by a qualified commercial establishment. The cost of on-location shampooing or in-plant cleaning by commercial establishments is approximately the same.

2. If on-location shampooing must be accomplished by custodial personnel in lieu of commercial in-plant cleaning or on-location contract shampooing, the following procedures should be used:

a. Note direction of the pile-lay on wool rugs or carpets.

b. Brush against pile-lay with a stiff deck brush to loosen soil and open pile tufts in preparation for shampooing.

c. Vacuum to thoroughly remove soil loosened by preparatory brushing.

d. Spot for ink, oil and other stains.

e. Use concentrated detergent, especially manufactured for rug shampooing. Mix with water in accordance with manufacturer's recommendations. Six quarts of the solution will cover approximately 100 square feet of rug area. Use disk type floor machine

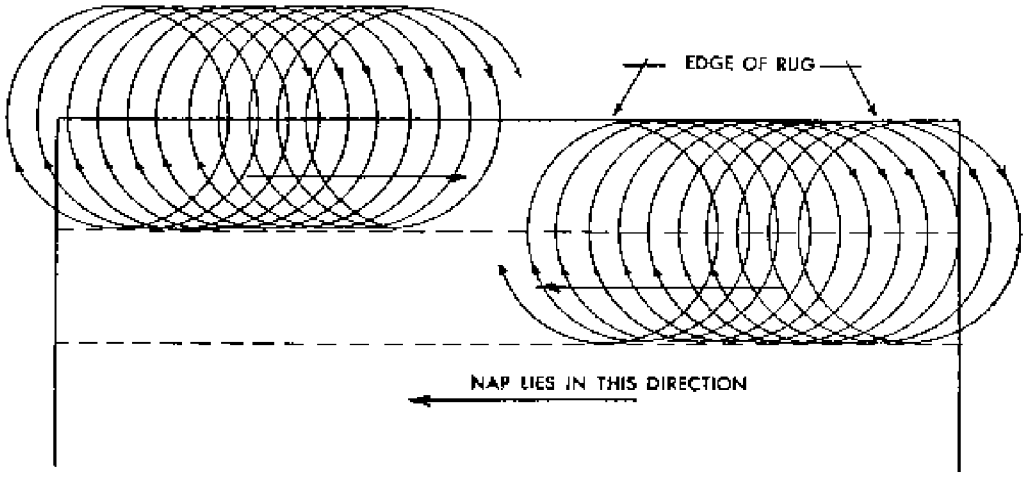


Figure 8. Rug Shampooing Diagram.

equipped with solution tank and nylon bristle brush. Operate machine in a circular motion in an area three to four feet square, using broad overlapping strokes, and feeding only enough solution to work into the rug pile, fig. 8. Avoid wetting the rug backing. Repeat this process until the entire rug is cleaned. Corners, stairs and areas under fixed equipment, etc. may be shampooed with a hand brush. Particular care must be taken to use only enough solution to clean carpets or rugs. Excess moisture may cause shrinkage or foster the growth of fungi such as mildrew.

f. Use industrial vacuum cleaner to pick up as much of the suds and dirt in solution as possible.

g. Cotton pile rugs, because of their tendency to flatten, should be shampooed, followed by deck brushing to erect the matted pile and shampooed again to effectively clean all sides of the pile tufts.

h. After the entire rug is shampooed and vacuumed, erect the pile tufts by brushing with the pile-lay, as noted in *3.a* above, with a clean deck brush. The workman's shoes should be clean to avoid soiling the cleaned rug.

i. If necessary to remove fluff and lint dislodged by the post-shampoo brushing, use vacuum cleaner in one direction only.

j. Place aluminum disks under all legs of furniture and other equipment until the rug is dry to avoid staining from rust or dye. Stiff heavy neutral color or white paperboard is also useful for this purpose.

k. Allow rug to dry thoroughly before using. Drying may be speeded by opening windows or using fans.

l. A properly cleaned rug should be free of streaks, stains and spots and should have a bright uniform color.

3.1.9 Snow and Ice Removal. Snow and ice removal is gradually becoming a less tedious and back breaking job with the development of new equipment and chemicals. Icy sidewalks and entrance ways are not only a maintenance problem, but also a severe safety hazard. Ice, snow, and slush on sidewalks and entrance ways contribute to increased maintenance problems with interior floors, finishes and floor coverings within the building. These maintenance and safety factors dictate that the prompt removal of ice, snow and slush be accomplished as soon as possible on all walks and entrance ways. When this task is assigned to custodial personnel, snow and ice should be removed by them from steps, landings, and entrance walk from sidewalk to buildings. When practical, this work should be done prior to arrival of personnel, before noon hour, and before termination of work. The problem of ice removal will sometimes require the use of chemicals. The addition of various types of ice removers adds further to the interior maintenance problem. The use of sand and cinders present an abrasive problem: the chemicals present corrosive, toxic and deleterious effects on all types of flooring especially carpeting. There is the problem of deciding which type of ice melter to use: rock salt, calcium chloride or the prepared melters. Abrasives used depends on availability

Figure 9a. Before—Use of Entrance Mat.

Figure 9b. After—Use of Entrance Mat.

and comparative cost. Rock salt is the cheapest and probably one of the best for use on steps and sidewalks. Calcium chloride costs about twice as much as rock salt and is very difficult to store unless it is kept under moisture-proof conditions. Calcium chloride is effective at much lower temperatures than rock salt and is much faster in reacting to ice than rock salt. In the use of chemicals, aside from the cost, there is also the problem of possible damage to the interior floors and floor coverings. The ideal remover is one that will not track into the building and damage floor finishes and covering, and will also not have any deteriorative effect on the grassed areas. The important thing to remember about all these melting chemicals is to instruct the employees to wear gloves, and keep away from the skin and eyes. If irritation of the skin or eyes develops, the employee should immediately flush the affected parts with large amounts of clean water and then report to the first aid facility for treatment. Floor mats should be placed in foyers and entrances to remove snow and dirt from shoes. Mats and surfaces underneath should be cleaned at least daily and more frequently if necessary to prevent tracking of snow and dirt into buildings, fig. 9a and 9b.

3.1.10 Washing Walls and Woodwork:

(1) *General.* Proper washing of walls and woodwork reduces painting frequency. Walls may be washed many times and still remain in excellent condition. If there is doubt whether walls may be washed successfully, test a small area that is not likely to be noticed.

(2) *Washing Walls by Hand:*

(a) *General.* Wherever possible, it is recommended that wall washing be performed by two men properly trained to do the work.

(b) *Equipment.* In small rooms, workmen should use safety-type ladders to wash ceilings and high areas. In large areas, more progress can be made if planks 12 to 16 feet long are placed on safety scaffolds. Planks should be placed at the most efficient working height. Before use, scaffolds and planks should be examined for safety. Workers should use caution in handling planks and scaffolds to avoid damage to walls or fixtures.

(c) *Cleaning materials.* Cleaning materials consist of the following:

1. All-purpose synthetic detergent.

2. A large sponge or clean cloth for washing, another for rinsing, and a soft, clean cloth for drying.

3. 14-quart buckets for washing solution and rinse water.

(d) *Wall Washing Procedure.* Test solution on walls to be cleaned. Use a solution only as strong as necessary. Change cleaning solution and rinse water frequently. Do not use trisodium phosphate or alkali soaps on painted surfaces. Work should proceed from corner to corner without stopping to eliminate formation of lap marks caused by the drying of dirt and washing solution. Lower half of wall should be washed first to prevent streaking which results when dirty water runs down. Use straight, up and down strokes for speed and a more even effect Full details of wall washing procedure are found in paragraphs 6.2.25 to 6.2.27 incl.

(3) *Washing Walls with machine.* Only trained personnel should use a wall washing machine. The use of this machine greatly increases production. Proceed in the same manner as washing by hand. Full details are contained in paragraph 6.2.25 Wall Washing —Hand Method, and paragraph 6.2.27 Wall Washing—Machine Method. Figure 10 shows wall washing machine in operation.

(4) *Wall Washing Standards.* Streaks and lap marks should not be left on the wall. Corners, other areas difficult to reach, and woodwork should be clean. The wall should not be bleached from use of too strong a washing solution. Water should not be permitted to run on floor or fixtures. Pictures, furniture, and other fixtures moved should be replaced.

(5) Types of Wall Materials and Finishes:

(a) *Unpainted Plaster Walls.* Unpainted plaster walls cannot be washed because they are porous. They may be dusted with a soft bristle brush or vacuum cleaned with a soft brush. Walls should not be dusted in damp weather.

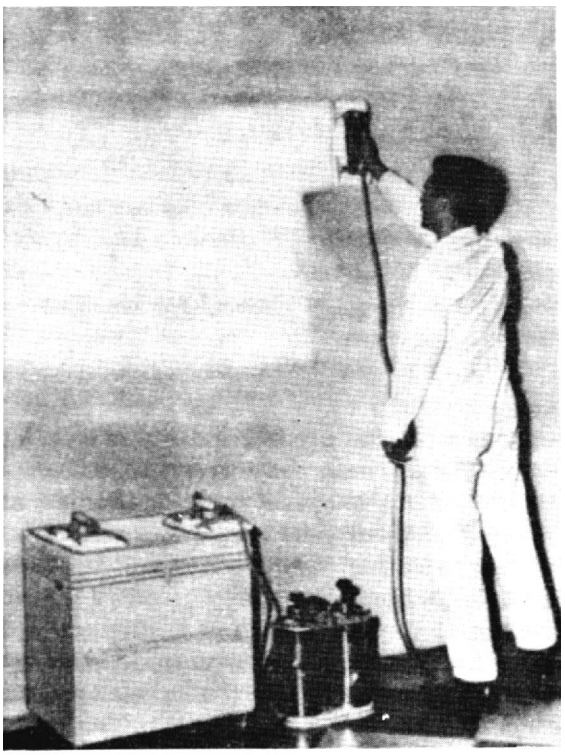


Figure 10. Wall Washing Machine.

(b) *Walls Painted with Water Paints.* Walls painted with kalsomine or whitewash are porous and cannot be washed. Modern types of water paints are usually washable. Do not wash older varieties of water paint unless surface is to be repainted. Although walls painted with casein paint are waterproof, cleaning with wallpaper cleaners is recommended.

(c) *Oil Painted or Enameled Walls* These walls may be washed with all-purpose synthetic detergent solution without damage.

(d) *Glass, Vitreous-China and Glazed Tile Walls.* Walls of these types may he washed with any neutral cleaning solution. Strong cleaners may cause crumbling of cement of mortar joints. Scouring powders or abrasives should not be used.

(e) *Marble, Granite, Onyx, and Other Natural Stone Wainscoting.* Wash with synthetic detergent, rinse with clear water, and dry with clean cloth. Never allow an oily duster to touch these materials. Oil stains marble and other light colored stone.

(f) *Acoustically Treated Walls.* These walls may be washed by machine only if extreme care is taken. A vacuum cleaner should he used to remove dirt from holes before washing. If cleaning solution enters small holes, the surface may warp or buckle. Walls should be cleaned by working a small area at a time. Follow with rinsing and drying towels as quickly as possible. If walls are to be cleaned by hand, use a stiff palmetto brush. Start at or on ceiling and work downward. Care should be taken to avoid scuffing, which will create an uneven surface.

(g) *Fiberboard Wall Material.* Most fiberboard wallboards are porous and absorb water. They cannot be washed unless painted. Care must be taken in washing to prevent water seeping into the seams which will cause swelling and discoloration.

(h) *Oil and Latex Base Painted Gypsum Board.* If surface is unscarred, walls may he washed with all-purpose synthetic de-

tergent solution. If water is allowed to seep between seams, discoloration will occur, and if repeated, will cause deterioration.

3.1.11 Dusting. Dusting should be done with a treated cloth or yarn duster. Dusting with brush or feather duster is not recommended as it only spreads more dust. Cloths should be shaken into dustbox to remove loose dust When soiled, they should be washed and treated as described in (paragraphs 6.2.1 and 6.2.2).

3.1.11.1 High Dusting. High dusting includes areas over windows and doors, overhead pipes, ceilings, and walls. High dusting should be performed before floors are cleaned and before low dusting is undertaken. An industrial or domestic vacuum cleaner, with long tube and soft bristle brush, should he used to remove dirt from walls, ceilings, and over doors and windows. If hand methods are used, heavy dust accumulation over doors, windows, moldings, and top of pipes is removed with a counter brush by sweeping it into a dustpan. Finish dusting these surfaces with a yarn duster. Walls and ceilings may be brushed with a clean floor brush. Ceiling should be swept first. Clean walls by starting at ceiling, sweeping downward in one stroke. A more thorough but longer method is to cover brush with clean cloth and wipe ceiling and walls. Full details of high dusting procedure are found in paragraph 6.2.28. Curtains and draperies may be removed and cleaned, or vacuumed in place, fig. 11.

3.1.11.2 Low Dusting. Low dusting includes all places easily reached when standing on the floor or approximately 6 feet high. It should be performed after floors have been swept and dust has settled. Dust-cloth should be moved lightly over surface. Hard rubbing may leave oily streaks. Do not allow treated dustcloth to touch walls. It will leave a dark spot which cannot be removed from plastered, casein-painted, or kalsomined walls. Custodial services personnel do not dust typewriters, adding machines, and similar equipment. Paragraphs 6.2.29 and 6.2.30 give full details of dusting procedures.

3.1.11.3 Dusting Standards. Surfaces should not have dust on them. There should be no oily streaks on surfaces or stains on walls from contact with oily dusters. There should be no oily film left on glass in cabinets or pictures. Dust should be removed, not scattered around the room. Table 1, page 4, gives a suggested schedule for dusting.

Figure 11. Automatic Battery Powered Floor and Wall Dusting Machine.

Section 2 — USE AND CARE OF EQUIPMENT

3.2.1 General. The purpose of this section is to explain the operation of custodial services equipment to enable personnel to use it efficiently, and avoid abuses which necessitate repairs and lead to eventual failure. Repair of equipment is not normally accomplished by custodial service personnel.

3.2.2 Equipment Needs. Equipment needs vary from installation to installation. They must be determined in each case. Equipment listed in Chart 2 will cover most conditions. Further consideration should be given to items needing frequent replacement. There

should be sufficient supplies available at all times to insure continuous, efficient, custodial services. Labor costs are several times that of supplies and equipment. In the interest of health, morale, and economy, the importance of using the most suitable supplies and equipment should not be overlooked. All installations should keep current. on new developments and keep the equipment up-to-date.

3.2.3 Floor Maintenance Equipment. One of the most important functions in the care of floor maintenance equipment is the lubrication of machines. A tag or stamped plate showing type and frequency of lubrication should be attached to each machine. Supervisor should keep manufacturer's lubrication instructions for each type of machine, and records showing last date of lubrication. Frequency and method of lubrication must meet the requirements of these instructions. The Navy requires that each machine be identified by a tag or label which shows date of purchase, cost, and instruction, which cautions the operator to handle with care and provides proper maintenance.

3.2.3.1 Battery Powered Scrubbing Machine: Fig. 12. (1) *General.* This is a battery powered, motor driven, all purpose floor maintenance machine. This machine meters the scrubbing solution to the floor, scrubs thoroughly, picks up dirty solution and dries in one operation.

(2) *Attachments*—By changing brushes or pads, squeegee blade and inserting filter bag in vacuum element, the machine can be used for buffing operations and dry vacuum. Other attachments include: hose assembly, wand assembly, floor and wall tool assembly.

(3) *Handling Machine.* The following rules should be adhered to in handling the Battery Powered Scrubbing Machine:

(a) Sweep floor thoroughly before scrubbing.

(b) Remove charger plug and close battery cover.

(c) Be sure dirty water tank is drained and clean. Check cleanout door and drain valve and tighten if necessary for a good seal. An open drain valve will cause poor water pickup.

(d) Two forms of scrubbing are commonly used; single and double scrubbing.

1. Single scrubbing operation is one using the brushes and the squeegee pick-up together leaving the floor dry in one coverage, fig. 13.

2. Double scrubbing operation uses only the brushes, leaving the solution on the floor then returning for a single scrub using brushes and squeegee pick-up. Do not allow solution to dry before making second scrub.

(4) *Use of Equipment and Accessories:*

(a) *Lambswool Pad.* A lambswool or synthetic wool pad with elastic or draw

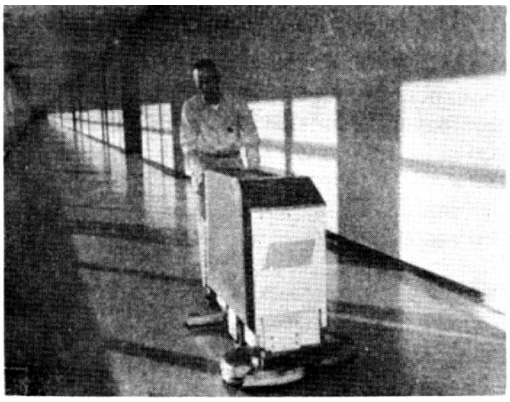


Figure 12. 30" Automatic Battery Powered Scrubbing Machine.

Figure 13. 30" Automatic Battery Powered Dry Pickup Machine.

string cover that fits over brush block. The lambswool pad is used to remove brush swirl marks and where a high luster is desired.

(b) *Steelwool Pad.* Steelwool pads come in various sizes and grades ranging from fine to course. The fine pads No. 00 are used for polishing and course pads No. 3 are used for scrubbing or dry cleaning floors.

(c) *Synthetic Pads.* These pads are of woven nylon or other synthetic material, impregnated with an abrasive, used to polish or scrub floors, and come in various grades from fine to course. Some pads are equipped with a special holder and others are held in place by the weight of the brush. These pads are advantageous in that they can be washed and reused, and are more economical and effective than brushes. These pads are used in the spray cleaning process.

3.2.3.2. Disk-Type Machine:

(1) *General.* This is a concentrated weight, motor driven brush machine. When in use, the entire weight of the machine is carried on the brush. The weight of the machine increases the effectiveness of polishing. It is equipped with wheels or casters which are used only to move machine from one job to the next. Essential parts consist of the frame or housing, power unit, driven assembly, handle, and attachments. (fig. 3.) This machine is more practical for congested areas than the larger machines.

(2) *Attachments.* Brush consists of cast aluminum or laminated wood disk to which fibers are attached, fig. 14. Attachments are connected to drive shaft by cast iron or pressed steel collar with lugs. The machine should be turned on its side while attachments are being installed. Make certain brush has been turned on as far as passible before motor is started.

Note: Never install brush by running machine over it, and allowing it to lock by running motor.

Steel wool disks are used for dry cleaning. Palmetto bassine or synthetic pads for scrubbing, and tampico brush and synthetic pads are used for polishing. Handle is used to guide machine, tilt it back on casters for maneuvering. Handle can usually be adjusted to suit operator.

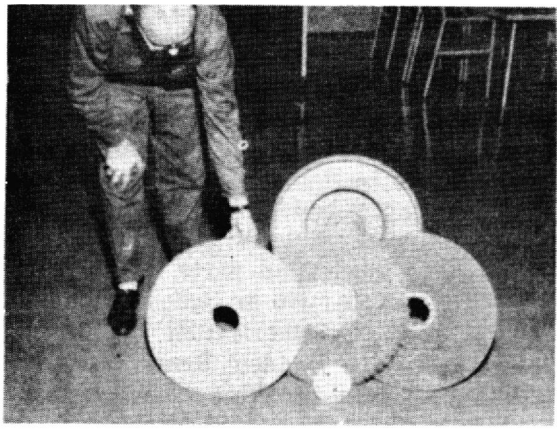


Figure 14. Attachments for Battery Powered Floor Machine.

(3) *Size of Disk-Type Machine.* Machines are available in 9 to 22-inch bursh diameters. The 12-inch size for small or congested areas, the 15-inch size for general use, or the 18-inch for large open areas, are best suited for Department of Defense installations.

(4) *Cleaning Machine.* Wipe dust, wax, etc., from machine immediately after use. Wipe extension cord before winding cord on handle.

(5) *Handling machine.* (paragraph 6.2.22.)

Note: When using disk-type machine, do not tilt more than required for maneuvering. Excessive tilting causes undue strain on brush, gears, and motor.

(6) *Use of Machine.* Disk-type machine is used to clean, burnish, or polish floor surfaces. By use of water tank attachment, it may be used to shampoo rugs.

3.2.3.3 Vacuum Cleaners.

(1) Two types of vacuum cleaners are at the disposal of custodial services personnel, the domestic and industrial type. Household-type machines create a high vacuum, but the air intake is small. Industrial machine (fig. 7) has a blower vacuum, but air intake is much greater, which increases cleaning capacity. In general, use of industrial vacuum is recommended in preference to household-type. Household-type machines

are used to best advantage where items to be cleaned are small, few, or widely scattered.

(2) *Care of Vacuum Cleaners.* Store machines and equipment in a clean, dry room. Keep attachments clean and stored where they will not be damaged. Empty bags or dust collecting receptacles daily. Wipe machine with cloth at least once a week. If motors have lubrication parts, add two or three drops of SAE 10 or light machine oil once a week. Overlubrication of electric motors should be avoided. Remove strings, hair, or dust from brush or vacuum attachment daily. Carry household machines from one room to another or one building to another. Wind cord loosely on hooks provided. Tight winding damages cord. Avoid running over electrical cord, and pulling cord from wall attachment except by the plug. Avoid bumping into walls, radiators, furniture, and other objects with machine or attachments.

(3) *Use*. Vacuum cleaners are used to clean rugs, draperies, walls, pipes, radiators, and convectors, and for water pickup operations.

3.2.3.4. Floor brushes:

(1) *Construction.* Floor brushes are constructed in two units; the hardwood handle, and the head consisting of wooden block and fibers. The handle has one end threaded to screw into the block. The head is a hardwood block from 18 to 36 inches long. Two threaded holes are bored in block to permit reversing handle as fibers bend from sweeping too much in one direction. Fibers may be hog hair, horsehair, or one of a number of plant fibers, such as palmetto, tampico, raffia, or arenga. Tufts should extend at least three and a half to four inches from block. Handle is usually too long for practical use. Set brush on floor with handle upright. Mark handle at point even with worker's eyebrow. Cut, round the end, and smooth with sandpaper.

(2) *Care of Floor Brushes.* Clean floor brushes with nail brush as required. Wash oily or very dirty brushes in warm all-purpose synthetic detergent solution. Shake out as much water as possible and hang to dry with bristles as straight as possible. Do not use until brushes are thoroughly dry. Hang brushes by handle in a clean, dry place when not in use. Do not let bristles touch wall or floor. A one quarter-inch hole bored in handle two inches from end makes it possible to hang brushes on a 12 penny finishing nail. Do not knock brushes against wall to clean them. This splits end of block and loosens tufts. Brush handles should be changed to other hole in brush head at least once a week to keep them in best working condition.

(3) *Use of Floor Brushes.* (table 4)

3.2.3.5 Corn Brooms:

(1) *Construction.* Corn brooms are made from stems of broom corn plant. Stems or straws are attached to handle by winding wire around them. They are then stitched to make broom flat and keep straws from spreading. Straws are trimmed at bottom. Good brooms should weigh at least 32 pounds per dozen.

(2) *Care of Corn Brooms.* Always store brooms where there is a free circulation of air. Bore hole in handle in same manner as floor brushes in order to hang them. Never store brooms by standing on straws. Clean brooms by washing in all-purpose synthetic detergent solution, rinse with clear water, and hang to dry with straws down. Do not use wet corn brooms. Do not use corn brooms for scrubbing. Both operations weaken straws and brooms lose shape.

(3) *Use of Corn Brooms.* (table 4)

3.2.3.6 Sweeping Mops. Sweeping mops are made from cotton yarn. Straight mops have yarn stitched to a cotton mitten which may then be slipped over wire or wooden mop-head. The V-type mop has 10-inch, canvas-backed sections which fit into the mophead itself. The V-type mop may, by opening or closing handles, extend from 6 to 57 inches wide. Both mops are easily removed from frame for washing purposes. Quality of mops depends on length of yarn and density or thickness. Sweeping mops may be used dry or treated, fig. 15.

(1) *Care of Sweeping Mops.* When mops become badly soiled, remove from

Figure 15. Treated Yarn Dust Mop, 60 inch.

mophead and shake out as much dirt as possible. Place mops in solution of two teaspoons of trisodium phosphate to one gallon of warm water and let them remain overnight. Rinse thoroughly in clear water. Wring out as much water as possible without damaging mop, and hang to dry. Before using, fluff out strands by hand. Hang straight sweeping mops in same manner as floor brushes. Hang high enough to keep off floor. Store where there is a good circulation of air. Store V-type mops with mophead upwards where there is good air circulation. Do not let yarn touch wall.

(2) *Use of Dry Sweeping Mops.* (See table 4.)

(3) *Treated Sweeping Mops.* These mops are the same as dry sweeping mops except they are treated to collect more dust. Mops should be treated with a solution of liquid mop treating compound.

(a) Dip the mophead into the solution until it is completely submerged. Agitate it so that all the strands absorb the solution.

(b) Remove the mophead from the solution and using a mop wringer, wring it out as thoroughly as possible. The mophead may be wrung out in the bucket containing the solution or in a separate bucket. If a separate bucket is used, the extracted solution should be poured back into the solution bucket to be reused.

(c) After the mophead has been thoroughly wrung out, it should be hung up in a well ventilated area and permitted to dry out overnight. After this drying out period, the mophead will be ready for use.

(d) In use, if mops or cloths do not become too dirty, they may be re-treated. However, when too dirty, they can be washed out easily with soap and water, allowed to dry, and retreated as above.

(4) Care of Treated Sweeping Mops:

(a) Dust-mops should be treated at the end of each working shift by spraying 1 ounce of dust-mop treatment to 4” to 6” of dust-mop length.

(b) Mops should be stored in a clean, dry area. Hang the mop so that it does not touch the walls and equipment and will not be brushed against by personnel. Mops should be hung with the mop heads down.

(c) Keep the tie cords in proper repair and in place.

(d) Do not allow the strands to become knotted or matted. Keep the strands free from splinter, metal particles, and keep them combed regularly.

(e) When shaking out a mop, do not strike the handle or any part of the mop against a hard surface. Such action might damage the frame and weaken the handle.

(5) *Use of Treated Sweeping Mops.*

(a) Do not use a dust mop on wet or oily floors.

(b) While mopping, keep the back as straight as possible and lean slightly forward at the hips. Do not over-reach. Following these rules of work posture will reduce fatigue and prevent strain.

(c) Do not lift the mop from the floor unnecessarily; some of the gathered soil may drop from it.

(d) Do not bear down on the mop; pressure is not necessary to proper mopping action.

(e) If a vacuum is available, utilize it to remove loose soil from the mop. If no vacuum is available, the mop head should be frequently shaken into a large waste recep-

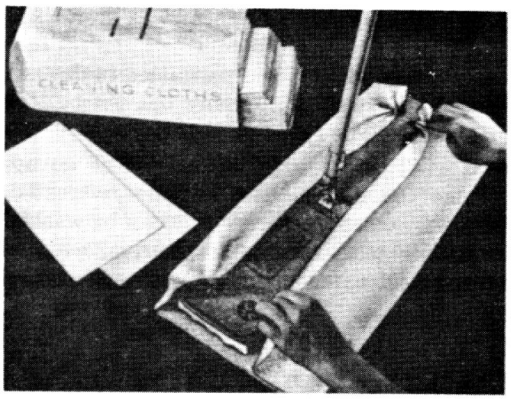


Figure 16. Swivel Sweeping Tool and Reversible Cleaning Cloth.

tacle or a dust box to remove and collect loose surface soil.

(f) By use of swivel duster with chemically treated cloths, dust can be picked up. These treated cloths are reversible throw-away type, fig. 16.

3.2.3.7 Counter Brushes:

(1) *Construction.* Counter brushes are made in the same manner as floor brushes except the handle is a shaped extension of the wooden head.

(2) *Care of Counter Brushes.* Comb out bristles occasionally. When brushes become soiled, wash in lukewarm all-purpose synthetic detergent solution and rinse in clear water. Shake out as much water as possible. Brushes should be dried with bristles down. To do this, extend brush over edge of bench or table and place weight on handle. To prevent loosening of tufts, brushes should be kept dry except when being cleaned. When not in use, hang by handle so bristles are free.

(3) *Use of Counter Brush.* Use brushes to gather sweepings into dustpan, to clean corners, behind pipes, and under radiators.

3.2.3.8 Radiator Brushes:

(1) *Construction.* Good radiator brushes are made of hardwood thin enough to allow cleaning the narrow spaces between radiator columns. Brushes consist of tufts of bristles or horsehair about three inches long.

(2) *Care of Radiator Brushes.* Comb bristles with nail brush occasionally. When storing, lay brush on flat surfaces so tufts will be fiat and straight. Do *not* wet brushes. Use brushes to clean radiators only.

(3) *Use of Radiator Brush.* Run brush through radiator openings, first from end to end, and then through side openings.

3.2.3.9 Damp Mops:

(1) *Construction.* Damp mops are made of cotton or linen yarn. Linen is preferable because it is stronger and wears longer. Each strand should be 8-ply yarn with breaking strength of not less than 70 pounds. There should be 135 strands stitched together at center by a three quarter to one and a half inch tape. Mops should be from 6 to 6½ inches wide, and from 35 to 37 inches long. A dozen mops should weigh not less than 15 pounds.

(2) *Care of Damp Mops:*

(a) Always rinse a mop carefully after use and squeeze it dry.

(b) Mop should be stored in a warm dry area where air circulates freely.

(c) A mop in storage should be hung with the yarn away from the wall, strands down.

(d) Do not let damp mops touch each other, other equipment, or come in contact with walls.

(e) If mop strands become loosened, they should be removed or cut off with scissors in order to prevent snagging and splattering.

(f) In addition to rinsing the mop whenever the mopping water is changed, the mop should be carefully washed periodically —(daily if possible).

(3) *Use of Damp Mops:*

(a) The basic purposes of the damp mop is to transfer liquid to and from floors.

(b) Soak a new mop in warm water for at least 20 minutes before use, in order to remove excess oils and expel entrapped air, providing better absorbency.

(c) Change mopping water frequently while mopping to prevent the water from becoming overly dirty. Rinse the mop each time the water is changed. Dirty water will cause a re-deposit of soil during mopping, leaving soil streaks.

(d) While mopping, the mop should stay on the floor, and should not be tossed through the air.

(e) The mop should be turned from one side to the other frequently while in use in order to expose more clean, moist strands.

(f) Wherever possible the use of mop squeezers are recommended over roll-type wringers. The squeezer is more efficient in the removal of moisture from the mop and is far less destructive to the mop. Mops should be squeezed or pressed carefully to remove water; twisting the mop will tear or weaken the strands.

(g) Mops can be used for scrubbing small areas and spots by folding the mop over on itself so that the tips of the strands are in direct contact with the floor, under pressure. Never scrub with the part of the mop closest to the holder because this will tear the strands.

(h) Avoid the use of mops with lye, caustics, or strong undiluted cleaning solutions because these materials attack the mop strand.

(i) It is not economical to continue to use worn-out mops—they should be discarded.

3.2.3.10 Mop Buckets:

(1) *Construction.* Mop buckets are generally made of galvanzied sheet iron or iron dipped in molten zinc after forming. The latter method is preferable because seams are sealed in the process. It is recommended buckets be fitted with wheels or casters so they can be moved easily. Buckets equipped with a gear-type mop squeezer are more satisfactory than those with an ordinary wringer. Oval-shaped buckets provide more space than round ones for dipping mop when wringer is attached. Buckets should have strong handle and a three-quarter to one-inch rim on bottom to permit easy emptying. Buckets should have capacity of 28 to 44 quarts.

(2) *Care of Mop Buckets.* Avoid rough handling that will dent buckets or open seams. After use, rinse and dry to prevent rust. Wipe outside with damp cloth to remove dirt and accumulated soap.

(3) *Use of Mop Buckets.* Mop buckets are used to hold water for mopping, and to hold water emulsion wax if it is to be applied with a mop.

3.2.3.11 Mop Trucks:

(1) *Construction.* Mop trucks usually consist of two-compartment tanks mounted on metal frames with attached wheels or casters. Tanks are made of galvanized iron, one for soap solution, one for rinse water. Soap solution tank has wringer attached. Both tanks have drain spigots and have a 28-gallon capacity each.

(2) *Care of Mop Trucks.* Avoid rough handling that may dent tanks or open seams. After use, rinse out with clear water and dry with cloth to prevent rust. Remove dirt and collected soap from outside with damp cloth. Always leave wringer in released position. Oil wringer and casters twice a week.

(3) *Use of Mop Trucks.* Mop trucks are used in all large mopping operations. Use of mop buckets in these instances would mean changing water more often.

3.2.3.12 Dustboxes:

(1) *Construction.* Dustboxes may be made in the engineer shop. They are long, narrow boxes made of 20-gage galvanzied sheet iron and have a wooden carrying handle. There should be a removable screen about four inches from bottom of box. This prevents sweeping mop from coming in contact with dirt already collected in box. Screen is removed when emptying box.

(2) *Care of Dust box.* Empty box in waste can when necessary. Avoid rough handling which may bend box.

(3) *Use of Dustbox.* Dustbox is used as a container to receive dirt from sweeping mop. It should be placed where it may be reached easily as sweeping proceeds. It is

also used as a container to receive dirt from dustpans.

3.2.3.13 Wax and Floor Seal Applicators:

(1) *Construction.* Applicator consists of a wooden block over which lambskin is stretched, and a second block with handle attached. The blocks are held together with two small bolts equipped with wing nuts. Pressure of two blocks held by wing nuts clamps lambskin and holds it in place.

(2) *Care of Applicator.* After use, remove lambskin and wash thoroughly in lukewarm all-purpose synthetic detergent solution. Rinse carefully and lay on a flat surface to dry. Do not put lambskin in hot water. Heat or hot water will cause shrinkage or hardening of lambskin. If lambskin has been used in applying floor seal, wash in solvent before using all-purpose synthetic detergent solution, then wash and rinse. If skins are to be stored for a period of time, place them in container with tight fitting lid and add several moth balls.

(3) *Use of Applicator.* Applicator is used to apply water emulsion wax and floor seal. It is recommended for use when waxing small areas. On large areas this process may be performed more efficiently and economically with a mop.

3.2.3.14 Nail Brush:

(1) *Construction.* Nail brush consists of a one by one inch piece of hardwood ten inches long, or broom handle same length with ten-penny common nails driven through holes three-quarters of an inch apart.

(2) *Use of Nail Brush.* Use nail brush to comb matted hair and embedded dirt from floor brushes, sweeping mops, and counter brushes.

3.2.3.15 Putty Knife. Each employee should carry a putty knife with a 1 1/4 inch blade. It is to be used for removing gum and other sticky substances from floors.

3.2.4 Wall Washing Equipment:

(1) *Wall Washing Machine.* Machine usually consists of two tanks, one to contain chemicals, the other rinse water. Two trowels with extension hoses are attached to the tanks. Air pressure forces liquid through hoses to trowels. The third trowel on some machines is used as dryer. Trowels are made of non-corrosive metal. Trowels are covered by terrycloth pads folded to four thicknesses. Valves on trowel handles control flow of solution. Figure 10 illustrates the wall washing machine.

Figure 17. Adjustable Safety Platform Ladder.

(2) *Care of Wall Washing Machine.* Manufacturer's instructions on care of the machine should be followed.

(3) *Use of Wall Washing Machine.* The machine may be used on any smooth wall which has been properly sealed and painted with water-resistant paint. Use of a heavy sponge, or a synthetic pad under the regular trowel pad to wash, stippled, swirl, sand finish, and painted brick surfaces. Machine may also be used to clean ceramic tile or stone walls, such as marble, granite, or quarry tile. Detailed description of wall washing procedure may be found in paragraph 6.2.27.

3.2.5 Miscellaneous Tools.

3.2.5.1 Ladders. The safety-type platform ladder or the aluminum bucket-type ladder should be used for wall, window, and light fixture cleaning as well as high dusting. Inspect ladders before use to insure that they are in safe condition. Instruct personnel how to use them safely. Figure 17 shows the safety-type ladder. Fiberglass should be used near electric wiring, because of the possibility of electric shock.

3.2.5.2 Dusters:

(1) *Construction.* Dusters are made of cotton yarn held in a twisted wire. Low dusting requires use of duster with short wooden handle. For high dusting, handle should extend five to six feet. Twisted wire holding duster should be light enough to be bent to contour of pipe or other overhead surfaces.

(2) *Treating Dusters.* Dusters should be sprayed lightly with a dust mop treating compound 24 hours prior to using.

3.2.5.8. Toilet Bowl Mops. Toilet bowl mops are constructed of a wooden or plastic handle 12 inches to 18 inches long, to which acrilan or cotton strands are attached for use in cleaning and swabbing toilet bowls and urinals.

Section 3—CLEANING WINDOWS

3.3.1 Window Cleaning. The principal purpose of window washing is to allow the maximum amount of light to enter the room. Washing for sake of appearance is of secondary importance. Prior to the cleaning of glass, the window sash should be brushed or wiped with a damp cloth.

3.3.1.1. Windows should be cleaned with a sponge dampened in clear water, and dried with a squeege or window brush or sponge industrial wiping cloth. Squeegees reduce drying period of large windows. Where safety hooks are installed, a safety belt must be used when cleaning windows above the first floor. Use of a window pad is recommended because it absorbs spilled water, and protects sill against damage from worker's shoes. Window washing equipment consists of safety belt, chamois, squeegee, sponge, and sill pad. Safety belt must be examined and in satisfactory condition before being worn. No worker is allowed to repair these belts. Before using ladders, inspect them to insure that they are in safe condition. When washing windows, the following rules should be observed:

(1) Clean windows at time that will cause minimum interruption.

(2) Close doors and windows before opening the one to be washed.

(3) Do not pass from one window to another on outside of building.

(4) Replace furniture or articles moved in the process of cleaning.

(5) Before leaving room, replace window, window shades, or venetian blinds in original position. Full details of window washing procedures are found in paragraph 6.2.31.

(6) Consideration should be given to the use of "Telescopic Window Washer" when scaffolding and other accessories are required. This is an efficient tool for manpower savings and safety, figs. 18 and 19.

3.3.1.2 Window Cleaning Solutions. Clear water should be used to clean windows. Change water frequently. If local conditions make windows difficult to clean, mix glass cleaner, detergent, and water as required. This solution cuts grease and leaves no deposit on glass. Ammonia should not be used. It dries out and loosens putty. Soap-grit cake is not suitable and leaves a white coating which is difficult to remove from sash. Take care to remove all the cleaning solution from adjacent painted surfaces.

3.3.1.3 Frequency of Window Cleaning. Frequency of window cleaning depends on season of the year, local climatic conditions, amount of industrial smoke in the air, and use of the building. Under average conditions, windows should not need cleaning more than two times yearly. Condensation on inside of glass in winter time may make it necessary to clean inside more often. Glass in

Figure 18. Telescopic Window Washer.

Figure 19. Telescopic Window Washer with Detergent Tank.

entrance doors and other places subject to hand marks should be wiped with a damp cloth often enough to keep them in presentable condition.

3.3.1.4 Standards of Window Cleaning. There should be no streaks or unwashed areas on glass. Water should not be spilled on sills, sash, floor, or furnishings. Shades and blinds should be readjusted. Occupants should not be disturbed.

Section 4—TOILET ROOMS

3.4.1 Toilet Rooms. A high standard of cleanliness should be maintained in toilet rooms. Toilet bowls, seats, urinals, washbowls, and other fixtures should be cleaned properly. For this reason, it is of utmost importance that adequate ventilation be maintained at all times. Room temperature should be kept as low as possible in summer, and not over 65 in winter. A warm room allows growth of bacteria, which is the source of many odors. Under normal conditions, daily cleaning

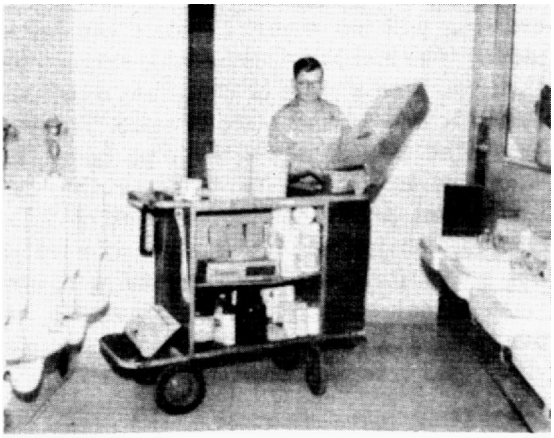


Figure 20. Janitorial Service Cart.

issatisfactory. If a toilet room receives a great deal of use, it may need cleaning more often. Figure 20 illustrates a type of cart that can be used for toilet rooms supplies.

3.4.1.1. Toilet Bowl and Seat. Wash bowl inside and out with all-purpose synthetic detergent solution. If water is hard and deposits are difficult to remove, use one tablespoon of trisodium phosphate to one gallon of water. Care should be taken in the use of trisodium phosphate. It attacks porcelain or vitreous china. (paragraph 6.2.32.) Remove stains with a damp cloth and a detergent solution. Do not use toilet bowl cleaner, acids, or stronger alkalies because they damage surface glaze. Work toilet mop as far as possible into trap. Thoroughly wash rounded inside rim of bowl. Inspect rim with hand mirror to insure complete removal of deposits. Wash seat with all-purpose synthetic detergent solution. Wipe outside of bowl and seat with clean, damp cloth. Flush toilet to rinse inside of bowl. Wipe tank and cover with clean damp cloth. If toilet bowls are properly cleaned daily with detergents, stronger cleaners will not be necessary. A detailed description of this operation is in 6.2.32.

3.4.1.2 Urinals. Wash urinals in same manner as toilets. (paragraph 6.2.32.) The trap is the main source of odor in urinals. This is caused by urine salts crystallizing just above the water level on dry sides of trap. If

urinal is flushed frequently, crusting will not occur. Crystals can be removed if urinal has a detachable screen over the trap. Wad a piece of cloth into a ball and attach it to a strong piece of wire. The wad should be pushed down the pipe below the waterline or to the point where the trap turns. Put about one-half cupful of toilet bowl cleaner into the trap and fill with water. Let stand for one hour, remove wad, and rinse urinal thoroughly. If urinals do not flush properly, report immediately to supervisor (paragraph 6.2.32).

3.4.1.3 Washbowls. Grease and other dirt can be removed with all-purpose synthetic detergent solution. Remove stains and soiled spots with a damp cloth and a detergent solution, the hand-spray bottle can be utilized. Avoid use of acids or strong cleaners which will damage surface glaze. Clean chromium-plated hardware with clean, damp cloth. Do not use abrasive cleaner. Do not allow water to seep between back of fixture and wall. See that fixture edges are clean. A detailed description of this operation is found in 6.2.33.

3.4.1.4 Toilet Room Floors. Much of the odor from toilet rooms comes from floor. Urine soaks into almost every known type of flooring material except ceramic tile. Once soaked into floor, it is almost impossible to remove. Toilet room floors should be thoroughly mopped at least once a day to prevent odors. The area immediately around urinals should be well scrubbed. Use a cleaning solution of all-purpose synthetic detergent and warm water.

3.4.1.5 Toilet Room Walls, Partitions, and Woodwork. Accumulations of dirt on walls and partitions should be removed daily. Wainscoting, stall partitions, and woodwork should be spot cleaned daily and washed every 1 to 3 months, depending on the use of the toilet. Where surfaces are washable, walls and ceilings should be washed at least once a year. (paragraph 6.2.25 or 6.2.27.)

3.4.1.6 Use of Disinfectants and Deodorants. Proper cleaning and ventilation eliminates the need for disinfectants and deodorants in toilet rooms. (paragraphs 2.2.6 and 2.2.7.)

3.4.1.7 Care of Dispensers. In the interest of sanitation, dispensers for individual soap and towels should be provided in washrooms. Paper towels, toilet paper, sanitary napkin and soap dispensers should be checked and refilled daily. Dispensers should have sufficient capacity to require filling only once a day. It is most important that they are not allowed to become empty. Substitution of materials may cause failure of equipment. A common example is clogging of toilets when paper towels are used for toilet paper. Dispensers should be wiped clean with a damp sponge each day. Clean soap dispenser nozzles, and check to make sure they operate properly.

3.4.1.8 Used Towel Disposal. Large metal waste cans with swinging tops are recommended. Emptying of waste is made easier if a bag large enough to fill the can is hung from the inside pegs. This avoids unnecessary handling of can. This container should be emptied each day. Wash the can with detergent and water once a month.

3.4.1.9 Electric Hand and Face Dryers. These should be wiped clean with a damp sponge daily, including accessible interiors of air intake and outlet.

3.4.1.10 Toilet Room Standards:

(1) There should be no odors.

(2) Toilet bowls, washbowls, and urinals should be clean and bright. Soap film should not remain on fixtures.

(3) Dispensers shoud be filled and in working condition.

(4) There should be no marks on walls or fixtures.

(5) Floor, wainscoting, and partitions should be clean.

(6) Room should be adequately ventilated. Temperature should be between 600 and 65°F in winter and as low as practicable in summer.

(7) All metal fixtures and other hardware should be clean and bright.

(8) Mirrors should be clean.

Section 5—MISCELLANEOUS CLEANING

3.5.1 Miscellaneous Cleaning:

3.5.1.1 Light Fixtures. It is generally recognized that dirt absorbs and masks light. The progressive decrease of light caused by accumulation of dirt renders periodic cleaning of lighting equipment a necessity. The frequency of cleaning depends entirely upon local conditions. Airconditioned and air-filtered rooms may require fixture cleaning only once a year. In an atmosphere which is heavy with dust and fumes, cleaning every month may be necessary.

(1) *Light Meter Readings.* The cleaning schedule for a particular installation should be determined by light meter readings after the initial cleaning. When subsequent foot-be determined by light meter readings after candle readings have dropped 20 to 25 percent, the fixtures should be cleaned again. Readings should be made with the light meter at the working surface with the meter reader in the position of the operator or person using the working surface. In the case of fluorescent lighting, if cleaning does not restore the correct lighting levels, the fluorescent tubes should be replaced. The light output of a fluorescent tube decreases with age.

(2) *Washing of Equipment.* Lighting equipment should be washed, not just wiped off with a dry cloth. Washing reclaims 5 to 10 percent more light than dry wiping, and reduces the possibility of marring or scratching the reflecting surfaces of the fixtures.

(3) *Removable Equipment.* Removable glassware, reflectors, and diffusing louvers should be cleaned as follows:

(a) Immerse in a solution of synthetic detergent cleaner, conforming to Federal Specification P-D-220. Scrub with a soft brush or sponge. When incrustation is not removed by scrubbing, use No. "0" steel wool or nylon cleaning pad to remove dirt film.

(b) Rinse in warm clear water and dry with a clean cloth. (Fig. 22.)

CAUTION: Do not immerse lamp base or electrical connections in the cleaning solution.

(4) *Fixed Equipment.* Glassware, reflectors, and diffusing louvers that cannot be re moved should be cleaned as follows:

(a) Wipe with a moist cloth or sponge, using a solution of synthetic detergent cleaner, conforming to Federal Specification P-D-220. When incrustation is not removed by sponging, use a nylon cleansing pad or No. "0" steel wool to remove dirt film.

Figure 21. Lamp Changing Unit.

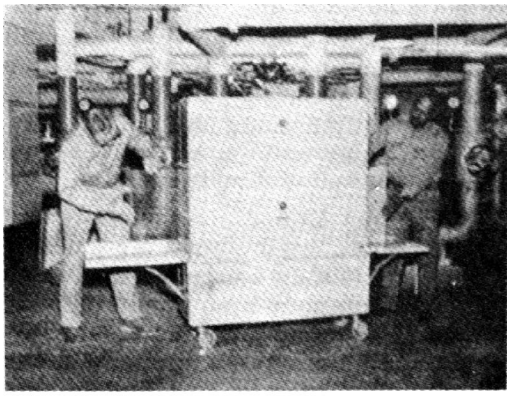


Figure 22. Light Diffuser Cleaning Machine.

(b) Wipe off excess moisture with a clean cloth. Clean outlets and stem hangers with a moist sponge or cloth dampened with synthetic detergent cleaner and wipe dry. Replace enameled, chrome, aluminum, or silver-plated reflecting surfaces that cannot be adequately cleaned and polished.

3.5.1.2 Lamp Replacement. Neglected lamp outrages reduce illumination. (If burned-out lamps are not properly replaced, outages alone can cause illumination to drop to unsafe foot-candle levels in a short time.) In some cases, it may be satisfactory and more economical to clean lamp surfaces and fixture interiors only when relamping. Each activity must determine whether electrical or janitorial service personnel do the cleaning. (Fig. 21.)

(1) Individual Method. Lamp replacement is the responsibility of the custodial section in areas where custodial services are provided. To prevent reduced illumination from lamp outages:

(a) Instruct employees to report burn-outs as they occur.

(b) Replace blackened or discolored lamps even though they are still burning Discoloration indicates the lamp is nearing the end of its useful life.

(c) Replace the lamps as they begin to flicker. A burned-out lamp in a live circuit may cause damage to starter and ballast. Blackening at the ends of the tube adjacent to the base indicates that the lamp is near the end of its useful life.

(d) In general, replace with the same type, wattage and voltage as that of the lamp removed. If frequent burn-outs occur. voltage rating of lamps may be too low. Lamps of higher wattage than called for on lighting design plans should not be used.

(2) *Group Method.* Group replacement of lamps before they burn out is considered the most effective and economical method for relamping large and/or hard to reach areas such as hangars, drill halls, auditoriums, and shops. Whenever possible, group replacement should be accomplished simultaneously with fixture cleaning, thus, reducing overall labor cost, causing minimum interference with production, and producing a higher and more uniform level of illumination. To replace lamps by this method install new lamps in all fixtures in the prescribed area. After these lamps have been in use 75 to 80 percent of their rated life, they all should be replaced and the cycle repeated. Lamps thus removed should not be reused since their light output and expected life are greatly reduced.

3.5.1.3 Drinking Fountains. Wash daily all enameled fountain bowl with all-purpose synthetic detergent solution daily. Wipe remainder of fountain with clean, damp sponge. Wipe chrome fittings with clean, damp sponge. Do not use metal polish on fittings. Detailed information is given in paragraph 6.2.34.

3.5.1.4 Furniture. Furniture should be washed with a lukewarm all-purpose synthetic detergent solution applied with a lightly damp cloth. Dry furniture with a clean, dry cloth as quickly as possible. Use a minimum of water on wood furniture. Excess water causes grain to swell, which will loosen finish and cause rough spots. It may also loosen glue in the joints.

3.5.1.5 Window Shades. If shades are washable, place on large sheet of paper on floor. Wash with sponge dampened in all-purpose synthetic detergent solution. Rinse with sponge moistened in clear water and dry with clean cloth. Turn shade over and wash other side. Never rub hard enough to stretch cloth. Hang up to dry. When almost dry, roll shade tightly and let remain for several hours to eliminate wrinkles.

3.5.1.6 Venetian Blinds. Venetian blinds are generally painted with waterproof enamel and may be washed. Usually, they may be cleaned in place with a vacuum attachment (fig. 23) or by using a sponge dampened in all-purpose synthetic detergent solution. Turn slats flat, and clean one side. Wipe with a clean, soft cloth. Turn slats with opposite sides facing, and flat. Repeat process. Avoid getting straps wet. If slats are very dirty, and dirt is hard to remove, take blind down and wash each slat

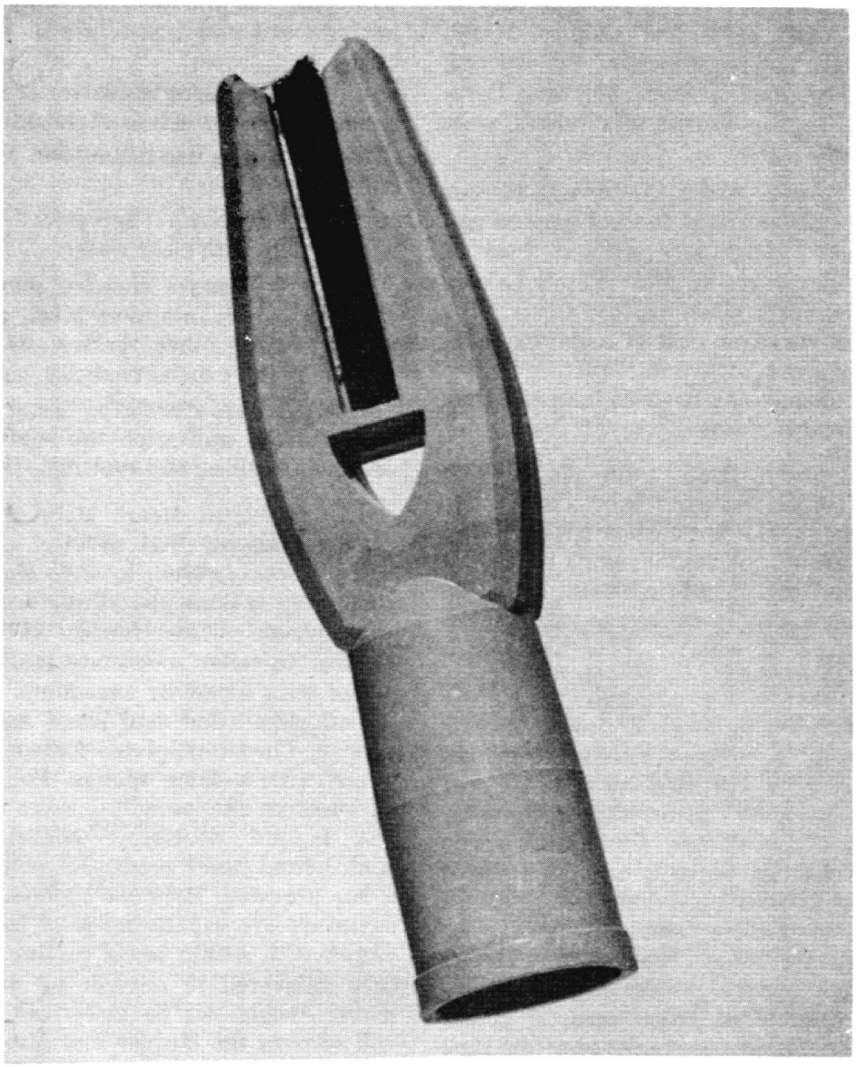


Figure 23. Venetian Blind Cleaning Attachment.

separately. When facilities permit, blinds may be cleaned as a unit by dousing them in tub of lukewarm water and all-purpose synthetic detergent, rinsed in clear, lukewarm water and hung to dry. Such work is often accomplished by contract and should be closely inspected to insure maintenance of cleaning standards.

3.5.1.7 Porcelain and Vitreous China. Toilets, urinals, and many washbowls are made of porcelain or vitreous china. In both cases, the body is made of clay and glazed to make the surface water-resistant and easier to clean. The glaze is attacked by acids, alkalies, lye, and trisodium phosphate. Continued use of scouring powders will remove glaze.

3.5.1.8 Vitreous -Enameled Iron and Steel. Some washbowls and drinking fountains are made of cast iron or steel with a protective coating of vitreous enamel. Enamel is not resistant to acids or alkalies and is attacked by strong soap. Scouring powders will wear away enamel.

3.5.1.9 Glass. Glass is nonabsorbent and resistant to most acids and alkalies. Harsh abrasives are not recommended for cleaning because they may scratch surface. Paragraph 6.2.31 gives details of cleaning glass and windows.

3.5.1.10 Solid Metal. Solid non-ferrous metal and stainless steel fixtures may be polished almost indefinitely without fear of wearing through metal. Most metals become dark or discolored when exposed to air. This tarnish is a very thin coat of metal oxide. It may be removed with fine abrasive. Coarse abrasives should not be used because they damage metal surfaces.

3.5.1.11 Brass. Brass push plates, kick plates, name plates, escutcheons, and other furnishings should be polished with a damp cloth and metal polish. Rub until tarnish is removed and polish with a clean, dry cloth. Do not allow polish to get on surface to which fixture is attached. Do not polish brass-plated fixtures (paragraph 6.2.35).

3.5.1.12 Stainless Steel. Stainless steel is easy to maintain. In most cases rain removes dust and dirt. Where chemical deposits pose a problem, periodic rinsing with fresh water is all that is needed. Salt from ocean spray and other chemical deposits should be rinsed off as soon as possible. When acid solutions are used to remove stubborn stains, be careful to rinse the solution off immediately and to follow safety precautions. Discoloration and possible corrosion occur if solder and welding flux are not removed at. the time of installation. Flux can be washed off with a clean hot water at time of installation. Yellowish discoloration caused by welding can be removed with a mild abrasive or a phosphoric acid cleaner. Only steel wool should be used to maintain stainless steel. Fingerprints and scratching are caused by heavy pedestrian traffic. Detergent and water will usually remove fingerprints. If prints are stubborn use a clear white mineral oil or water cleaner. Scratches can be removed by rubbing with abrasive or a polishing cloth in the direction of the scratch marks in the finish. Usually, washing stainless steel with clear water and wiping with a damp cloth will keep the surface sparkling. The following items may prove helpful in stubborn cases:

(1) When using abrasives or detergents, rub only in the direction of polishing lines.

(2) Always use the mildest process that will do the job.

(3) Remove corrosive chemicals immediately with clear water.

(4) To remove chewing gum use only wood or plastic, stainless steel, or chrome-plated tools; other knives or scrapers, scratch or leave metal particles.

(5) Always rinse after using detergents or abrasives, and wipe the surface dry to prevent streaking and spotting.

3.5.1.13 Plated Metal. Metal fixtures are usually made of iron or steel plated with copper, brass, nickel, or chromium. Almost all plating is done electrically and is generally very thin. Most faucets and hardware fixtures in toilet rooms are made of brass plated with nickel or chromium. Chromium is both alkali and acid proof and does not tarnish. Chromium-plated fixtures should be wiped with a damp sponge. Polishing with an abrasive cleaner will damage the plating and is not necessary. Nickel tarnishes slightly and needs occasional polishing with a fine abrasive. Escutcheons and other door hardware are usually made of iron on steel plated with a thin brass coating which has been lacquered to prevent tarnishing. Polishing should not be attempted because it will remove the lacquer and also the brass. Full description is found in paragraph 6.2.37.

3.5.1.14 Lacquered Metal. A clear lacquer usually lasts for several years without yellowing, cracking, chalking or collecting soil. Merely wiping with a clean cloth moistened with water, a mild soap or detergent will keep lacquered metal clean. Lacquer should be applied in the following manner:

(1) Strip old lacquer with a lacquer remover.

(2) Clean the surface with accepted materials and equipment. If not available use a solvent cleaner.

(3) Apply a uniform, wet coat of lacquer, preferably with spray equipment, according to directions. If spray equipment is not available, a clean paint brush can be used first thinning lacquer with a slow-evaporating solvent.

(4) Let the first coat dry thoroughly before applying the next coat.

3.5.1.15 Plastics. Most plastics used for outdoor lighting optics are either acrylic, polycarbonate, or butyrate and require some care in the selection of a cleaning process. Many of the strong solvents, alkaline solutions, and types of alcohol may damage plastics. Plastics are susceptible to damage (scratching) if abrasives are used. The above mentioned plastics should not be harmed when washed with trisodium phosphate, Naphtha, or mild soap solutions. Acrylic and butyrate plastics soften if exposed to boiling water. The temperature of cleaning solution should be limited to 200°F when cleaning acrylic plastics and 150°F when cleaning butyrate. Polycarbonate may withstand temperature to 280°F.

3.5.1.16 Aluminum. Aluminum trim, doors, panels and finishes with a factory-applied protective clear coating should be cleaned using a sponge and mild detergent and water solution. Abrasives should not be used as they remove the protective coating, resulting in discoloration of the metal. Aluminum surfaces without a protective coating should be cleaned with an aluminum cleaner recommended by aluminum manufacturers. All spillage and marks on adjacent surfaces should be removed.

Section 6—CLEAN ROOMS

3.6.1 General. Clean Room is a work station or area with sub-micron filtered laminar air flow. It can be applied to an entire room. Interior appointments and efficient clean room operations are inter-dependent. Work benches, stools, tools, vacuum shoe cleaners, vacuum systems, exhaust hoods, air grills, and inter-communication systems should be simple, practical, consistent with work requirements, and easily maintained in clean-conditions. A thorough evaluation of actual Clean Room maintenance needs could result in cost saving and increased production.

3.6.2 Maintenance Requirements. A dependable Clean Room housekeeping program requires careful and proper cleaning of all equipment and interior appointments. Such a program requires regular and repetitive vacuuming and wiping of walls, windows, and ceilings. Mop floors and clean equipment after each shift or more often if necessary. Cabinets and work benches, interiors and exteriors should be vacuumed and scrubbed with clean tepid water and a strong cleansing agent or liquid detergent (Federal Specification P-D-220). A housekeeping schedule should be developed which would specify type of cleaning materials and frequency of each maintenance requirement for different levels of cleanliness.

3.6.3 Cleaning Processes. Several cleaning processes are involved in the maintenance of clean rooms and these could be grouped under preliminary and final cleaning. Preliminary cleaning includes the removal of visual contaminants such as dirt, acid, fibers of all types, hydrocarbons, and other contaminants, or organic and inorganic.

3.6.4 Cleaning Procedures. Good housekeeping practices are of prime importance. The time to clean such rooms is when they are not in use, usually at the end of each work day. Contamination levels cannot be measured properly so that cleaning and recleaning of components and entire systems is necessary to achieve a state of utmost cleanliness.

3.6.4.1 Four Basic Types of Preliminary Cleaning:

(1) *Mechanical.* This includes wiping, grinding, abrasive buffing, and liquid blasting. This type of cleaning involves compressed air, wire brush, and liquid or centrifugal force.

(2) *Detergent Cleaning.* Detergents remove contaminants from surface by use of liquid detergents, alkaline salts and emulsion cleaners, and/or a combination of detergent and salts.

(3) *Chemical Cleaning.* This is a two-part system. Certain acids yield soluable salts by reaction with oxides and sulfides, and alkaline solutions solubilize metal oxides. Mineral acids (sulfuric and hydrochloric) and passivating acids (nitric and chronic) and organic acids remove contaminants successfully. Liquid detergent is used for wetting-out action.

(4) *Solvent Cleaning.* This cleaning lifts particles into the solution with the solvent. Such solvents are: Petroleum and coal tar solvents, non-flammable solvents, polar solvents (ketones, alcohol, phenols), chlorinated hydrocarbons, emulsifiable solutions, and diaphase solvents (solution with aqueous layered cleaner). This pre-cleaning method is implemented by spray, immersion and brushing action, vapor degreaser, and ultrasonic excitation.

3.6.4.2 Final Cleaning. Cleaning products must be able to remove practically all contamination which remains in the work area after precleaning.

3.6.4.3 Cleaning Floors, Walls, Ceilings. (chapter 3, section 1.)

3.6.4.4 Specification Materials Detergents, Solvents. Use Federal Specifications listed in table 2.

3.6.4.5 Equipment. Use Federal Specification items listed in table 2, and add the following: portable vacuum cleaner with exhaust filters and aluminum ladders.

3.6.4.6 Selecting Cleaning Methods, Materials, Equipment. Selection depends on the type of contaminants, materials of construction, and the degree of cleanliness required.

3.6.5 Clean Work Stations. Clean work stations offer a high degree of flexibility when clean rooms are not available or practical. Clean work stations exit contamination from the work space by 100 feet per minute air velocity (1 mile per hour). Maintenance procedures are the same as for clean rooms.

3.6.6 Clothing Requirements (Minimum). Clothing can include many types of apparel and different kinds of materials. Such materials are dacron, nylon, orlon, lintfree materials, and synthetic material. Footwear includes street shoes with bootees, tennis shoes and tennis shoes covered with plastic bootees. Other clothing ranges from cap and smock, to cap and coat, to coveralls and cap. The minimum clean room clothing required Is smocks, caps, and clean room shoes. The fabric should be a non-flammable synthetic-type and no electrostatic properties. Smocks should be of simple design with no pockets and as few seams as possible. The cap should be the style worn in hospital operating rooms, covering the hair, so hair or dandruff will not fall in the clean room area.

3.6.7 Personnel Training. A method is needed to select the right personnel to maintain clean rooms. Maintenance personnel are frequently faced with challenges to clean unusual and intricate items where judgment could be quite important. Usually, cleaning procedures are designed to cover routine practices. Therefore, it is desirable to have maintenance personnel who possess above average intelligence, some mechanical ability, patience, and who are attentive to details. They should be knowledgeable in the use of all clean room tools. An important step in selecting such personnel should include classroom study plus on-the-job training. Training should include clarification of goals, value of equipment, the proper use of cleaning tools, and methods of doing the job. Classroom study should be conducted in a clean room environment, should explain the purpose of a clean room, define why utmost cleanliness is required, define cleanliness levels, explain the reasons for controlled environments, and the necessity to adhere to all clean room regulations. Personal hygiene should be stressed. Following classroom study, selected maintenance personnel should receive on-the-job training by working directly with an experienced employee. The new employee then should be interviewd by the supervisor and be assigned specific work tasks. Supervisors are to enforce good housekeeping practices.

3.6.8 Personal Hygiene. Personnel with skin or upper respiratory diseases should not be allowed to work in clean room operations. There are several problems and precautions involved in clean room maintenance operations. They are:

3.6.8.1 Physiological:

(1) Allergies to synthetic fabrics.

(2) Allergies to solvents being used in clean rooms.

(3) Profuse nasal discharge, colds, coughs, sneezing.

(4) High amounts of acid in moisture of hands.

(5) Skin conditions which result in abnormal skin shedding, dandruff, or skin flaking.

(6) Severe nervous conditions, itching, scratching, or claustrophobia.

(7) Severe cases of sunburn.

3.6.8.2 Habits, Disciplines:

(1) Bathe frequently.

(2) Shampoo hair weekly, control dandruff.

(3) Wear clean garments to insure maximum cleanliness.

(4) Wear gloves over chapped hands.

(5) Male personnel shave daily.

(6) Keep hair confined under caps.

3.6.8.3 Rules to be Enforced:

(1) Wash hands often.

(2) Wear gloves.

(3) Keep fingernails clean.

(4) Never comb hair in clean room.

(5) Do not wear fingernail polish.

(6) Always wear specified clothing.

(7) Never apply cosmetics in the clean room.

(8) Personal items, such as keys, coins, cigarettes, matches, pencils, handkerchiefs, watches, tissue, and combs cannot be carried into the clean rooms.

(9) Avoid wearing such items as jewelry, rings, necklaces, earrings, bracelets and lockets.

(10) Keep parts and tools of work station as clean and orderly as possible.

(11) Do not walk around unnecessarily.

(12) Do not eat food, chew gum or tobacco, or smoke in the clean room.

(13) Surgical head caps shall be worn at all times.

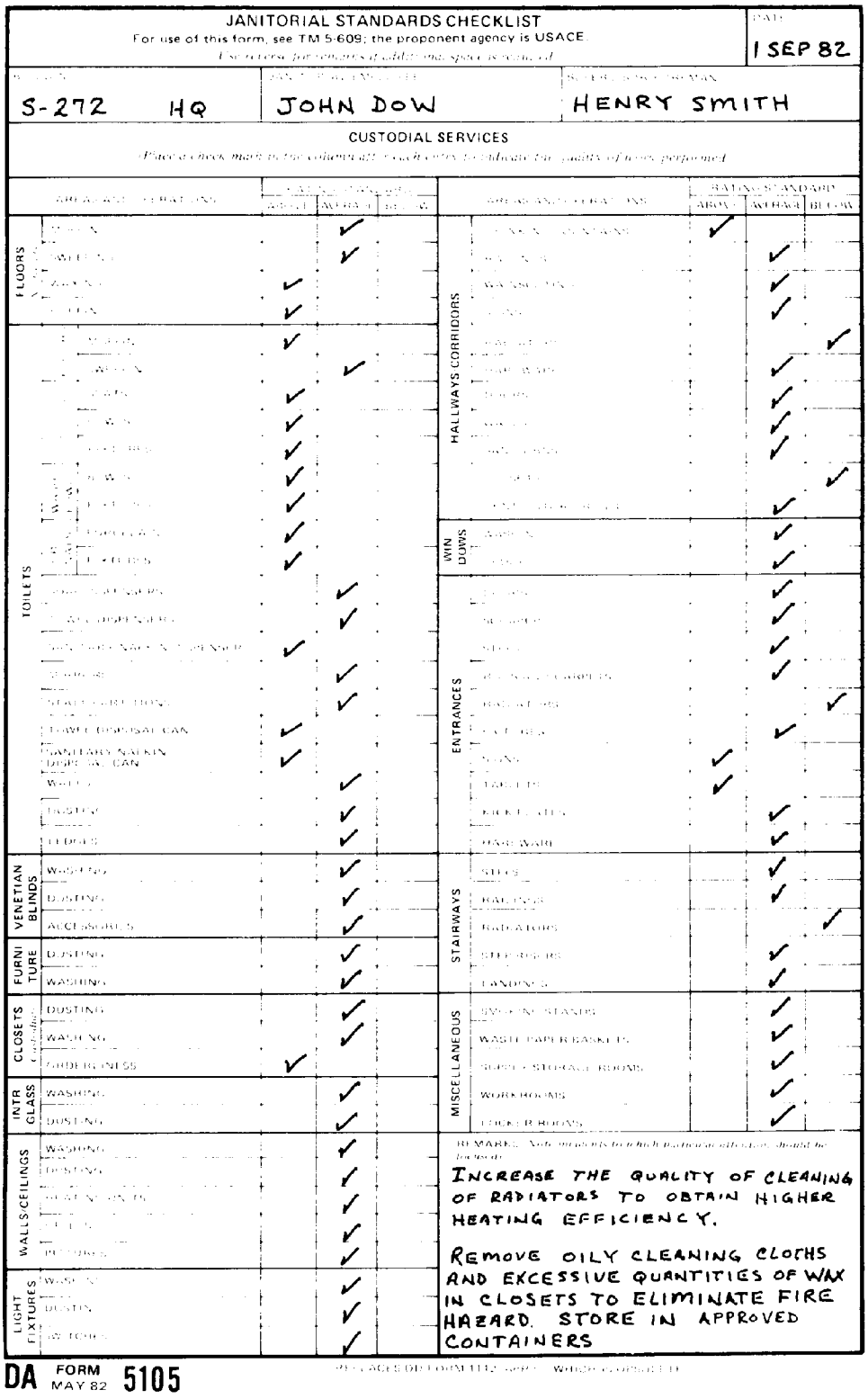
(14) When in doubt as to what you shall or shall not do, contact your supervisor.

3.6.9 Lighting Equipment. Clean room lighting equipment should be cleaned properly to maintain its high critical standards. Shadowless, uniform lighting at intensity levels of 100- to 150-foot candles is satisfactory for most clean rooms. Ceiling light fixtures should be flush-mounted and sealed to prevent airleaks. Fixtures should be accessible from above the ceiling. (paragraph 3.5.1.1.) Follow the latest revision to Federal Standard 209, Clean Room and Work Station Requirements.

Section 7—MAINTAINING CLEANING STANDARDS

3.7.1 Standards. Cleaning standards are given in chapter 6, of this manual. Supervisors or foremen, as applicable, should thoroughly understand these standards. The quality of custodial services will depend on correct interpretation and application of these standards.

3.7.2 Accomplishment. *Performance of cleaning operations should be checked weekly, or as often as necessary, to insure proper accomplishment. Checks should be made prior to, or immediately after, completion of a given job. This will allow supervisor to make a fair check of the work, and to determine whether improvements are necessary. Experienced workers will not usually require as much supervision as the inexperienced. Supervision serves its most useful purpose when the worker is given positive assistance in correct cleaning methods, rather than criticized for mistakes. For the Army DA Form 5105 (Janitorial Standards Checklist) (fig. 24) is used for such constructive criticism. DA Form 5105 is available through normal AG publications supply channels.



JANITORIAL STANDARDS CHECKLIST

For use of this form, see TM 5-609; the proponent agency is USACE

DATE: 1 SEP 82

S-272 HQ

JOHN DOW

HENRY SMITH

CUSTODIAL SERVICES

AREA AND OPERATIONS	RATING STANDARD: ABOVE	WEDGE	BELOW
FLOORS			
TOILETS			
VENETIAN BLINDS			
FURNITURE			
CLOSETS			
INTR GLASS			
WALLS/CEILINGS			
LIGHT FIXTURES			
HALLWAYS CORRIDORS			
WIN DOWS			
ENTRANCES			
STAIRWAYS			
MISCELLANEOUS			

REMARKS

INCREASE THE QUALITY OF CLEANING OF RADIATORS TO OBTAIN HIGHER HEATING EFFICIENCY.

REMOVE OILY CLEANING CLOTHS AND EXCESSIVE QUANTITIES OF WAX IN CLOSETS TO ELIMINATE FIRE HAZARD. STORE IN APPROVED CONTAINERS

DA FORM MAY 82 5105

Figure 24. DA Form 5105 (Janitorial Standards Checklist).